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### *Original Articles*

#### DEFORMITIES OF THE PLANTAR AND ANTERIOR ARCH.\*

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Orthopedic examinations of men in the several branches of military service disclosed findings that were a revelation not only to military men but to our civil population. For years our profession has ignored a condition that produces inefficiency to a very considerable extent. A survey of any one of our large industrial plants would reveal a great loss of efficiency due to abnormal feet. Modern factory construction with cement floors compel many operatives to stand for long periods of time on this unyielding surface, exposed to changes in temperature, in improper attitudes with feet encased in deforming footwear. Is it any wonder that abnormalities are the rule rather than the exception? For the relief of these ills where do these patients go? The newspapers afford generous space to all kinds of remedies "Tiz" that magical powder will refresh your tired feet. "Foot-Ease" will make them smile. A bunion appliance will reduce a hallux valgus so the wearer of the stylish shoe is promised happiness, another appliance will restore the graceful arch so much coveted by our lady of fashion. Orthopedic right and left hosiery will straighten crooked toes. "Freezone" will remove the corn, roots and all, it is generally understood by the laity that corns have roots which must be removed to afford a permanent cure. The shoe with the arch built in will restore a depressed arch or prevent deformity to a normal one depending on guillibility of sufferer. At frequent intervals appliance manufacturers send so called experts to give demonstrations in shoe stores showing what miraculous cures may be expected to follow wearing of these particular appliances, and for everyone they have just the proper ap-

pliance. It is surprising that intelligent persons will accept this kind of advice and wear all kinds of ridiculous devices expecting to realize the promises of glib salesmen.

Only recently one of our semi-religious institutions offered its forum to these pleasant and learned specialists whose love for humanity is only equalled by their desire to exploit the public. Clever advertisements made it appear that these demonstrations were in the interest of public health and afforded them the opportunity to inform the public that for every foot ill they had a specific appliance which could be had at any local shoe store. Those who had no foot ills were advised to use their magic pedic soap and powder to maintain their freedom from foot troubles. Charlatans of this type frequently impress their hearers that they have the indorsement of our profession and from all the criticism to the contrary it can reasonably be inferred.

Why does this state of affairs exist? Is it because the medical profession is incapable of prescribing intelligently? Most decidedly no. The average physician is inattentive towards this class of patients unless the symptoms have induced a condition that assumes a serious aspect when an examination is made and the remedy suggested is not usually the most appropriate one. For trivial ills little sympathy is exhibited and the usual advice is to have the style of shoe corrected. Now the large shoe stores have orthopedic departments presided over by so-called foot experts to whom are referred patrons of the store where a diagnosis is made and the proper appliance is sold. There is a close co-operation between the departments, for regardless of the style of shoe selected, the appliance is adjusted in harmony with the shoe rather than the foot.

Is it not reasonable to assume that business houses with established reputations would not pretend to offer a service that was not only legitimate but efficient? Not long ago a surgeon of unquestioned ability referred a patient

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to one of these departments presided over by an expert who is called doctor by store attendants but refrains advertising himself otherwise. I think it a mistake to send patients to instrument makers for the proper diagnosis of a foot lesion as I contend that none without a medical education is competent to perform this service.

The public, as a result of prolific advertising, is led to have great faith in arch-supports and is easily induced to buy them, giving them up only after painful experiences. Serious error is made in making a general diagnosis of rheumatism without any pretense of an examination and only changing the diagnosis when such treatment is plainly futile. Arthritic feet are of course met with but in only a small proportion of cases where the focus is readily appreciated. There is an assumption that the medical profession has delegated to the chiropodists the treatment of corns, bunions, callosities, ingrown nails, etc. This restriction is not to their liking so they have added the fitting of supports of all kinds and the treatment of any nervous, trophic, dermatological, infectious, or constitutional disease that might manifest itself in the feet. In this connection I might mention diabetic ulcers which are often treated by them until other symptoms develop when they go under the care of a physician. I believe the act defining the practice of chiropody should be amended so that the public would have better protection.

In a recent announcement of a Chicago school prospective, students are encouraged to enroll at once as future legislation may change the requirements. This school is financed and controlled by a large foot appliance manufacturer—naturally its students are extending the sale of its products. I do not believe it is generally known with what facility a practipedist is educated and fitted for the alluring profession of chiropody and a beautiful diploma bears silent testimony to his or her skill and knowledge. The public should be set right and I know of no better way than through education by the medical profession. I cannot deny myself this opportunity to bring out these facts which bear a general relation rather than a specific one to this paper.

I shall limit the scope of this paper to those lesions of the feet most commonly met with: deformities of the plantar arch and of the anterior arch.

If we are to recognize deformities of the feet which are pathological we must have some intelligent idea of what is physiological. We hear

so little physiology as pertains to the feet. We cannot use our feet in a physiological manner if they have changed their proper relation to propel the body. To define the function of the feet I would say they support and propel the body. This is done by the muscles acting as levers and the skeleton parts acting as fulcrums. The foot is a very complicated mechanism and requires for perfect function the harmonious relation of all its parts. Disturbed function is reflected in posture defects as the result of insecure support by symptoms in chest and spine. In proper walking is seen the leverage function well illustrated. With the foot in the proper attitude of walking the feet should be parallel so the line of weight passing down through the knees should extend to base of second toe or practically center of foot. The primary movements of the foot are adduction, abduction plantar flexion and dorsal or tibial flexion.

The range of motion at the ankle joint is 60 to 80 degrees, dorsal flexion 10 to 20 degrees less than a right angle and plantar flexion 50 to 60 degrees more than a right angle. Less than this range of motion indicates deformity. In these primary movements the foot is considered as moving while the leg is fixed, while in the attitude of rest the foot becomes the fixed body. Expressed in a simple manner the leg supporting the weight of the body has a tendency to tilt the foot over toward the inner side and slightly evert the sole. Under increasing weight the point of greatest pressure on the sole shifts from its centre and outer border toward the inner border. If the body is raised, as in walking, the inner arch is relieved from strain and the weight falls on the front and outer border. You will see by this that the foot as a passive support of the body occupies a changed relation when engaged in propelling the body. The important function of the dorsal flexors is to raise the foot as it is swung forward, plantar flexors to lift and propel the body. The difference in function is shown by the relative strength of the two groups—the plantar flexors being five times the stronger. The calf muscles (soleus and gastrocnemius) alone are three times as powerful as all the other muscles of the leg combined. The muscles that support the inner arch of the foot are tibial-anterior and posterior through their tendonous attachments which are inserted the former into the medial and under surface of the first cuneiform bone and base of first metatarsal, the latter into the head of the navicular bone and gives off fibrous

expansions to the sustentaculum tali of the cuneiforms, others go forward and lateralward to the three cuneiforms, the cuboid, and the bases of the second, third and fourth metatarsals. The peroni muscles evert the foot and bear a very important relation when they are shortened. The Tendo Achilles—the largest tendon in the body regulates extension and flexion of the foot. When this tendon is shortened, dorsal flexion is greatly limited and one of the most frequent factors of flat foot as flexion (dorsal) is at the expense of those muscles which raise the plantar arch. It must be considered when we speak of the action of these different muscles that the action of any depends on the normal relation of others. Any abnormality in bone or muscle restricts natural movements. I am not going into detail but if we understand the gross anatomy any radical departure is recognized as the disturbance in function is manifest.

I shall only mention the different degrees of flatfoot and deformity of the anterior arch. *Pes Planus* is a type that is painless and has its origin in relaxed ligaments in early life, usually rachitic, and regardless of the deformity, accommodative changes have gradually taken place so that these patients are fairly comfortable. It is far the best course to leave them alone as patients are usually advanced in years. The results obtained by breaking up old adhesions and bringing the feet back to approximately normal are at the expense of much suffering and the last state of these patients may be worse than the first. Much can be done by manipulation to restore flexibility which materially adds to their comfort provided a well fitting shoe is worn which does not attempt to overcorrect the deformity. The weak foot is the most attractive problem as here the orthopedist can give most valuable service.

This condition is most frequently met with in children, usually at an age when the greatest care should be exercised in fitting the shoes. As the twig is bent the tree inclines is an adage that is particularly fitting as these cases respond to intelligent treatment. Deformities of the anterior arch are especially prevalent and give occasion to much suffering and discomfort. It is not generally realized that the anterior or transverse arch of the foot corresponds with the metacarpo-phalangeal articulation in the hand and on the integrity of this arch depends the elasticity and flexibility of the fore foot.

*Etiology.*—The first and predominating factor that overshadows all others in bringing

about deformity in the feet is the conventional shoe by restricting the normal mechanism of walking and weight bearing.

Second: Greater burden on the feet than they are structurally able to bear as in obese persons.

Third: Relaxed muscular and ligamentous states following long confinement in bed.

Fourth: Congenital shortened heel cords preventing normal dorsal flexion.

Fifth: Over indulgence in sports as tennis, skating and others which produces great stress while the foot is pronated.

Sixth: Occupational as in the case of waiters, cooks, motormen and machine operators where change of posture is not permitted.

We may assume that all static feet are in a condition of muscular and ligamentous imbalance. The articulating surfaces occupy changed relations that disarrange function. The mechanism functionates at a mechanical disadvantage causing pain and spasm. Hypertrophy of the posterior tibial at its insertion in an effort to withstand increased stress. Periosteal thickening is noticed where pressure is greatest. Callosities form under metatarsal heads causing much pain and distress. Disused muscles atrophy, especially the abductors and plantar flexors, the calf muscles are atrophied—look shrunken. Low muscular tone is evident.

#### THIS IS IN BRIEF THE PATHOLOGY.

In order to bring out the symptoms a careful history is taken. Especial enquiry as to occupation, previous infections what were the initial symptoms and if changes in style of shoe worn were made. At what time of day is distress most evident to illustrate many cases give no symptoms early in the day but gradually develop as the day passes, others complain when the feet are used on arising after exercise distress abates. Seasonal the first warm days in spring aggravate previous ills and the tendency to remain out doors increases. As winter approaches offices and homes become over heated and changes in temperature will attract attention to feet. The examination should be systematic; and should begin when the patient presents himself in the office or clinic. The expression will oftentimes indicate the amount of suffering as painful feet certainly make one miserable all over. Very often only one foot is affected while careful examination will show that conditions in both feet are almost identical but frequently symptoms manifest themselves at first in one foot. Very often the right foot

is slightly more developed by use and is made to endure the same size shoe as its mate when it should be slightly larger. Have the patient walk, is there limping, notice if the clothing is worn at ankles and are the latter prominent. Does he or she arise quickly or is there some hesitancy in assuming the erect position? Is the disproportion great between the size of feet and body? Examination of shoe will show what parts are subjected to most pressure. The feet are now uncovered and the degree of the primary movements appreciated, what departures from normal noticed by testing out the various movements and with what degree of pain is complained of when these movements are made. Surface indications such as callosities will indicate pressure and friction or both. These are most of the symptoms to look for during the examination. Such questions are asked as will bring out degree of pain remembering that pain is elicited in a tendon when the ends are separated and in a muscle contraction will produce it. Excessive sweating with or without marked odor indicates irritation as the foot in this state has increased blood supply and naturally glandular activity is stimulated. Small sluggish ulcers are likely to be diabetic and urine should invariably be examined. History will connect past injuries with progressive symptoms as frequently sprains at ankle are not sufficiently immobilized nor time given for ligaments to reattach. Definite pain on pressure over any of the bones may indicate periostitis, this is especially true in the os calcis comprising a condition known as painful heel. The various locations of the bursae should be known as bursitis is quite common. You will realize that all these symptoms must be estimated in making a diagnosis and by elimination appropriate treatment instituted. Never attempt a diagnosis without a thorough examination and history with the feet uncovered. The object in treatment is to restore the feet to their natural relation, rearrange the mechanism, and impress upon the patient the necessity of following your directions as without the intelligent cooperation of patient the fullest benefit will not be secured. The first and most important aid to treatment is directing the proper shoe to be worn. An improper shoe will defeat any corrective measures, far better to dismiss the patient as results must be disappointing to patient and physician alike. Bearing in mind deformities are progressive it is natural that restoration or approximation to normal may be tedious. It is a mistake to attempt the same

treatment to the foot of a chronic sufferer whose feet are in a state of spasm so that every movement is torture, as would be instituted to the weak foot in a child or young adult who has not lost flexibility. At times a change in occupation must be insisted upon. It is manifestly impossible to accomplish the desired result when great strain is continuing. The weak foot should have a shoe overcorrecting the foot and with precise directions for exercises. A strip of adhesive should be applied to bring the feet into adduction. This strip can remain on a week when it should be reapplied. It will be found necessary to omit the adhesive as continued application acts as a local irritant. At each visit for treatment and observation the feet should be forcibly adducted as the structures that elevate the arch must have their tension reduced so that they may contract. This law in physiology must be ever considered; that all muscular and ligamentous tissues contract when their tension is reduced. The chronic condition requires different treatment. Any treatment producing radical change in weight bearing and locomotion will be unsuccessful. All spasm must be relieved by massage, vibration and passive exercise. The shoe having this object in view must not attempt too much as a corrective measure. More rest must be insisted on and as the condition improves a different type of shoe can be worn comfortably. Very often deformity of the inner arch is associated with depressed anterior arch. Then treatment for the combined condition may be carried out. Callosities under the metatarsal heads have this significance that the weight is transmitted thru two points of support instead of three and the constant effort to maintain the body in equilibrium causes much muscular fatigue. Arch supports have become widely used with the expectation that they will be curative. I believe great damage is done in an attempt to apply engineering principles to correct deformities in animate structures. I am certain their use when made of proper material is often indicated in the sense that they are intended as a splint to be discontinued when no longer of value. Any support that prevents the natural muscular movements under it brings about a condition of atrophy. I do not think the orthopedist is doing justice to the patient after applying arch supports as really that is only the beginning of treatment. Too many of our profession send patients to have arch supports fitted without a definite diagnosis which puts the instrument maker in the same position as the

counterprescribing druggist. Anything that favors adduction will have value. The object is to restore the proper relation and this is accomplished by an arch support which must be sufficiently elastic in texture to avoid any irritation when worn. I will admit that the metal supports or plates as they are called, will give at first a sense of relief but their continued use brings atrophy to the intrinsic muscles and absorption of fatty tissue under the arch so the bony structures come in direct contact with the metal and irritation is excited. Very often they are used without any regard to type of shoe worn which is like combining a sedative and stimulant in same prescription. I am quite convinced that the wearing of metal arch supports is not only unscientific but irrational. In correcting deformities of the inner arch instead of pushing up from below the pull should be exerted from above by increasing the tone of the muscles concerned and aiding this effort by intelligent treatment. In transverse arch deformities the object is to forcibly restore the movements at the metatarsal heads, elongate the extensor tendons by over extension of toes, and such padding just back of these joints so convexity on the ball of the foot may be replaced by a concavity. This requires much time and the pad is gradually raised in thickness until full relaxation is obtained then as indicated exercises are carried out the approximate correction is made. It is not always possible to carry out the best treatment suitable for the condition as most patients expect no interference with their usual habits or duties. I think in badly pronated feet overcorrection is best made and feet immobilized but few patients will submit to this procedure so the best under the circumstances must be done. Many patients after partial amelioration of symptoms will discharge themselves before much benefit is accomplished as they appreciate comparative relief and are unwilling to devote the time and effort for further treatment. I try to see these patients two or more times a week and as conditions improve lessen the visits. Certain exercises must be insisted upon and when these patients are constantly in touch with physician they are reminded at each visit and I think prevented from relaxing their interest. Nothing surpasses the comfort of a thorough massage with the movements of muscles stimulated to normal range of motion by vibration, a cooling lotion gives them decided comfort and at each treatment definite change in reconstruction is produced. At night dipping the feet from very hot

to very cold water is a powerful stimulant to circulation and increases muscle tone. Grasping a large agate with the toes is advised to increase the flexibility of the fore foot. When it is remembered that persons without hands become very dextrous with toes it is readily seen with what degree complicated movements may be acquired. So many sufferers with metatarsalgia imagine if they could only get rid of callosities under the metatarsal heads they would have normal feet not knowing that cause must be removed before effects disappear. To sum up treatment the essentials are, correctly fitting shoes, systematic exercises, corrective muscular movements under the immediate supervision of the physician, supports when indicated that will not destroy but redevelop muscles that have lost their tone and function by disuse without causing irritation.

#### CONCLUSIONS.

The attitude of the medical profession should change from one of passive to active interest in advocating reform in the manufacture and sale of shoes.

Freak styles in shoes should be subjected to a prohibitive tax to discourage their manufacture, preferably by federal enactment. The fitting of shoes should be supervised by a real orthopedist. Appliances for the feet should only be sold on the advice of the physician as any other corrective measure.

#### THE USE OF CORPUS LUTEUM IN PREGNANCY.

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In the *Journal of the American Medical Association* of Feb. 26, 1916, John Cook Hirst made a preliminary report of the use of corpus luteum extract to control the nausea of pregnancy. His theory for its use is as follows: "Every woman during the period of sexual activity is constantly absorbing corpus luteum. No sooner is the corpus luteum of one menstruation disposed of, than another appears to take its place. With the onset of pregnancy, this absorption ceases. The corpus luteum of pregnancy constantly increases in size until it reaches its acme about the third month. From this time on it is gradually absorbed. The nausea of pregnancy, beginning during the period of non-absorption, disappears about the time that the corpus luteum begins to decrease in size. Is it not reasonable to assume that this

is no coincidence but cause and effect; and that corpus luteum plays an important part in relation to nausea?"

Since then I have used the extract in thirty-eight women who have suffered more or less from toxemia of early pregnancy.

#### MATERIAL.

The material used is a solution equivalent to 2 gr. of desiccated corpora lutea in 1 cc. of physiologic salt solution saturated with chlore-tone for its local anesthetic effect. This comes prepared in ampoules in sterile solution ready for use. The product is taken from sows, 90 per cent. of which are said to be pregnant at the time of slaughter. The extract from sheep and cows is equally efficacious, but that of the pig is nearer to the human extract in richness of lutein cells. The dried extract in tablet or powder form is not to be used, because of the digestive action on it in the alimentary canal before absorption. Results are not obtained from the administration of the extract in this form, and some women seem to be more nauseated after its use by mouth.

#### DOSAGE AND ADMINISTRATION.

A small glass luer syringe is used for injection. The glass and needle are boiled for five minutes and then allowed to cool before drawing the solution into the syringe. The site of injection is prepared by cleansing with chloroform. The preferred area is the gluteal region, though the deltoid is usually satisfactory. The needle is driven sharply into the muscle and the contents slowly injected. Subcutaneous injections are not satisfactory because of the pain induced and the possibility of local anaphylactic action.

The number and frequency of injections necessary to produce results vary greatly. Mild cases suffering only from morning sickness may require three or four injections given every other day. Some respond to one injection, but it is advisable to give several more as the effect is usually transitory when only one is given. In severe cases it is necessary to give injections daily or twice daily. Each injection consists of 1 cc. of the solution.

This method has been used to control the vomiting of early pregnancy in thirty-eight cases. These were in my private practice and the Board of Health prenatal clinics. Each case was examined for possible source of reflex vomiting. Physical examination was made to discover and alleviate pelvic displacements and abnormalities. Elimination, especially

through skin and bowels, was provided for. The routine directions as to diet and hygiene were followed. Milder cases were cared for at office or clinic, more severe ones at home. A special effort was made not to permit suggestion to play any part in the treatment. In clinic cases injections were given without a word as to their purpose. As other routine measures such as drawing blood for Wassermann test are followed, the patients took injections as a part of the routine without knowing or suspecting what they were for.

The result has been gratifying in all cases except one suffering from Graves disease. There was a slight recurrence after a period following the injections in sixteen cases. These responded quite readily after renewed administration of from one to three injections. In mild cases there was usually an improvement after the first or second injection, and almost complete alleviation of nausea after the third or fourth injection. Several experienced repeated periods of nausea, but these were improved after further use of the extract.

There were three marked toxic cases which responded well after a course of injections given twice daily. All of these were confined to bed, unable to retain food, had low blood and pulse pressure, and were losing weight. Each was relieved of nausea and vomiting, and after sufficient nourishment was retained, each improved greatly in general health.

To illustrate the benefit derived from the use of corpus luteum in this severe toxic hyperemesis gravidarum, I will cite the following case.

Mrs. A. B.; age 24, No. 4038 Providence Hospital by ambulance September 2, 1918. On July 1, 1918, Dr. J. R. Glemet had dilated and left a silver stem pessary in the cervix. Early in August nausea and vomiting commenced and became progressively worse. The pessary was removed August 6. She had been in bed continuously since then. All of the customary remedies were of no avail in checking the vomiting. When I saw her September 17, she was so weak that she was barely able to raise her head. Injections of corpus luteum were started at once and given twice daily. There was no improvement immediately, after three days, slight improvement, and in ten days vomiting had stopped though slight nausea continued. She left the hospital September 28, able to eat and retain any food. She was about though still weak. The remainder of pregnancy was uneventful. She was delivered at home by

Dr. Glemet April 21, 1919, of a living seven pound male child.

After noting the specific effect of corpus luteum on toxic hyperemesis gravidarum, the nausea and vomiting of early pregnancy are proven to be symptoms of a toxic state due to deficient secretion of corpus luteum in the individual affected. This toxic state may produce other symptoms such as vertigo, dizziness, headache, neuritis and mental depression. These are all benefited by the administration of the extract.

In the so-called neurotic type of vomiting there is also an underlying basis of luteum deficiency. When the deficiency is supplied, all the various nervous phenomena disappear after the cessation of vomiting. The nervous phenomena neurasthenia and mental depression are frequently the result of luteum deficiency or the result of undernourishment from the inability to retain food because of the toxic state. I will cite a case of mental depression resulting indirectly from luteum deficiency.

Mrs. F. F., age 26, secondipara had her last period February 20, 1919. A month later she commenced to vomit. She vomited at frequent intervals through the night, was able to get only a little sleep during the day. Nausea was continuous. From an active, cheerful person, she became weak, inactive, lost considerable weight, did not care to get out or see people, lost interest in life, wept frequently and mentally was greatly depressed. I saw her April 25, and gave an injection of corpus luteum. This was repeated once daily. The depression improved rapidly. On April 29, she drove her car to my office. Vomiting much less each day; May 5, only slight occasional nausea. She is normal as before the onset of pregnancy and her mental depression entirely cleared.

Corpus luteum extract may be used as a diagnostic aid in early pregnancy. When nausea and vomiting appear early in pregnancy, the use of this extract may clear up the diagnosis before it is possible to diagnose pregnancy by physical signs. If nausea is stopped after injections, pregnancy is present. I will cite a case to illustrate this.

Mrs. W., age 23, secondipara had been confined June, 1918. Since then she had no period until she came to me January 28, to find out whether she was pregnant. The uterus was slightly enlarged. As I had not confined her it was not possible to diagnose early pregnancy from sub-involution of the uterus following the last pregnancy. She was given an injection of

corpus luteum and this was repeated the following day. As the vomiting stopped at once, I concluded that pregnancy existed, which subsequent development proved to be the case.

Hirst states in his last report that of 117 cases of hyperemesis treated by him with corpus luteum extract only four aborted. None of those I have treated have aborted. Leo Loeb has shown that the corpus luteum is essential to the formation of uterine deciduomata to receive the fertilized ovum. It probably has an important bearing upon the normal growth of fetus and decidua. If this is true a deficiency might be the causative factor in abortion or miscarriage. Assuming this to be the possible causative factor in habitual abortion, I am using the extract as a prophylactic against abortion. At present two such cases are under my care. I will cite one case.

Mrs. L. M., age 23, fourth pregnancy. In August, 1916, had three month abortion, in January, 1917, had four month abortion, in February, 1918, three month abortion. Her last period was the middle of November, 1918. She came to me a month later. Wassermann was negative. Corpus luteum has been given every two weeks one ampoule at an injection. She is now six months pregnant, in normal condition with probability of full term pregnancy.

There were no general anaphylactic reactions. There has been a slight urticaria about the site of injection after several injections. This was especially noticeable when the injection was given in the arm.

Hirst speaks of the inefficiency of this extract in women with goitre. While I have none with large sized goitre, I have had the same beneficial effect in those with the small goitre as in the nongoitrous.

The one case of partial failure was a case of exophthalmic goitre. Mrs. J. S., No. 1985, age 27, primipara entered Providence Hospital April 29. Her last period began February 15, 1919. She had been confined to bed for over a month when I first saw her. Nausea was constant, vomiting very frequent, especially at night.

She was very asthenic and had marked exophthalmic goitre with an average pulse rate of 120. Nausea and vomiting almost stopped in two weeks. Insomnia was controlled by veronal. At present the symptoms of Graves disease are as before except that she sleeps well. I consider the toxicity of early pregnancy under control, though she vomits very little once or twice

daily. Possibly the Graves disease has prevented complete action by the extract.

#### CONCLUSION.

1. During early pregnancy there is a great increase in corpus luteum and also in the internal secretion from it.

2. A deficiency in the normal increased secretion from the corpus luteum of pregnancy results in a toxemia of early pregnancy.

3. The principal symptoms of this toxemia are nausea and vomiting. Others less common are dizziness, headache, vertigo, neurasthenia, insomnia, mental depression. Later the symptoms of under nutrition and emaciation follow.

4. The administration of the extract from corpus luteum corrects these symptoms by supplying the deficient secretion of corpus luteum in the individual suffering from this toxic state.

5. The regular exhibition of this extract may control cases of habitual abortion due to deficient corpus luteum development in early pregnancy.

6. Diagnosis of early pregnancy may occasionally be aided by the specific effect of corpus luteum extract in stopping hyperemesis.

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### SCOPOLAMINE MORPHINE ANESTHESIA AND ANALGESIA.\*

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For ease of administration and variety of conditions for which it may be used, we have no anesthesia to compete with scopolamine morphine.

By giving attention to the ratio between the dose of the scopolamine and the dose of the morphine as well as to the size of the dose and the frequency of administration one may have either a surgical, an obstetrical or a dental anesthesia. In prescribing for this anesthesia three points should be well understood.

1. Scopolamine and morphine are antagonistic in their physiological action in every

respect, except that they both relieve pain and produce sleep.

2. Scopolamine has no effect upon the reflexes, whereas morphine dulls, or to some degree, abolishes the reflexes.

3. Scopolamine is quickly eliminated, i. e., in two to four hours. Morphine is eliminated slowly in twelve to twenty-four hours.

For producing surgical anesthesia, we may divide the amount to be given into a class dose and an individualizing dose. Class 1 includes patients between the ages of 15 and 55 years. The dose for this class is scopolamine 1-100 gr. with morphine  $\frac{1}{4}$  gr. given hypodermatically  $2\frac{1}{2}$  and  $1\frac{1}{2}$  hours before the time set for operation.

Class II is made up of patients from 10-15 and from 55 to 70 years of age. These patients are given scopolamine 1/100 gr. with morphine  $\frac{1}{8}$  gr. on the same hours as Class 1,  $2\frac{1}{2}$  and  $1\frac{1}{2}$  hours before operation.

Class III has patients from 5-10 and over 70 and the dose is scopolamine 1/200 gr. with morphine 1/16 gr.  $2\frac{1}{2}$  and  $1\frac{1}{2}$  hours before operation, the hours being the same for all classes. The class doses are given the patient in her room and orders are given that nothing be done to disturb the patient while she is taking the anesthetic.

The ideal condition is a darkened room with the patient entirely alone or behind screens. She must not be allowed out of bed after the first hypodermic injection and must be taken to the operating room on a cart one-half hour before the time set for operation, at which time she is seen by the surgeon or anesthetist who will prescribe the third or individualizing dose.

The individualizing dose which is given one-half hour before the operation depends upon the degree of anesthesia that has been produced by the first two doses and upon the respirations of the patient at the time the third dose is due. If the patient is well asleep and not easily aroused by being moved or spoken to, no third dose is given. If the patient is not well asleep, but easily roused and has normal respirations, a third dose will be given and it will be a repetition of the first two.

If the patient has respirations above or below normal and a third dose is needed, its size and composition will be determined by the frequency of the respirations. That is, if the respirations are below ten, the morphine is omitted entirely; if between ten and fourteen the dose of morphine is reduced one-half, but in either case the dose of scopolamine is unchanged, remain-

\*Read before the Calhoun County Medical Society, April 1, 1919.

ing the same as in the first two doses. On the other hand, the respirations may be increased beyond normal. If they are thirty or above and the patient is flushed and restless, give no scopolamine in the third dose, but repeat the same dose of morphine as was given in the first and second doses. If the respirations are around twenty-five, give one-half the dose of morphine previously prescribed in the first and second doses and omit all scopolamine. Where it is impossible to watch the patients while going under or where the anesthetist is inexperienced, a very satisfactory method is to give two doses of scopolamine 1/100 gr. with morphine  $\frac{1}{6}$  gr. one and one-half and one-half hours before operation.

In the majority of scopolamine morphine anesthetics, it will be necessary to administer ether or chloroform during the operation, in order to obtain relaxation or to secure quiet while incising the skin or peritoneum. But so small amount of ether or chloroform is necessary to produce the desired result that nothing is ever given until the operator is ready with the knife in hand and can test the patient's reflexes by beginning to incise the skin. If the patient moves the ether or chloroform administration is begun but never continued to the point of complete abolishment of reflexes. An open mask without any surrounding reinforcements of gauze or towel is preferable, and the ether or chloroform is frequently stopped for a longer or shorter period, according to the sensitiveness of the area in which the operator is working. Mrs. Pfifer, special anesthetist to the Wheatland Wyoming Sanitarium uses chloroform until the patient is quiet, then continues with ether, drop method, on the same mask, but if the patient becomes restive, the chloroform is resorted to until she is quiet, when the ether is again resumed.

Gas in the hands of the experienced gives most happy results when used as an adjuvant to scopolamine morphine anesthesia.

For obstetric anesthesia one must bear in mind that parturition is a reflex action entirely, and therefore a minimum dose of morphine should be given on account of its dulling effect on the reflexes. The scopolamine having an opposite effect can be used in full doses frequently repeated.

The initial dose of the obstetric anesthetic is scopolamine 1/100 gr. with morphine  $\frac{1}{8}$  gr. and may be given as soon as labor commences or at any time during the labor. This is the only dose of morphine that is given, but the

scopolamine 1/100 gr. is repeated every half hour for two succeeding doses. These three doses, i. e. the initial dose and the two doses following at half hour intervals will be effective in producing anesthesia in all obstetric patients. The problem now is to keep the patient in this state of anesthesia and it is accomplished by repeating the scopolamine 1/100 gr. every two hours until the patient is delivered, no matter how protracted the labor may be. If delivery is likely to take place at the time the last dose of scopolamine is due, this last dose is advanced one-half hour to insure perfect anesthesia when the head passes the perineum.

For work about the mouth or inside the throat, it is of prime importance that the reflexes are as active as is compatible with complete analgesia. Bearing this in mind, we produce dental anesthesia by giving the patient scopolamine 1/100 gr. with morphine  $\frac{1}{8}$  gr. and repeat this dose in one-half hour. In exactly one-half hour after the second dose the extraction should be made. This anesthesia is so light, it would more properly be called an analgesia. Patients sleep soundly for one or two hours, and on waking do not seem to know that the extraction has been done even though at the time of the extraction they opened the mouth widely and repeatedly at the suggestion of the operator and voluntarily expectorated.

The anesthesia is administered and the extraction is done with the patient in her bed. No mouth gag is necessary; very little soreness is felt after the extraction and no pain during extraction. If the extraction is delayed beyond the half-hour after the second dose you may lose the co-operation of the patient and not be able to do the extraction until another day.

Surgical analgesia is often desirable for painful dressings, minor or emergency operations and cystoscopic examination, and may be effected in one-half hour by the administration of a single dose of scopolamine 1/50 gr. with morphine  $\frac{1}{4}$  gr. A post-operative analgesia may be maintained for twenty-four or forty-eight hours by the hypodermic administration of scopolamine 1/200 or 1/400 gr., with morphine 1/32 or 1/54 gr. every four hours beginning two to four hours after the operation is completed.

Obstetric analgesia without obstetric anesthesia will be produced if the patient is not given her initial dose until after the cervix is more than one-half dilated and is followed by only one of the half hour doses of scopolamine

1/100 gr.; but from this point the two hours dosage is continued as described in the directions for obstetric anesthesia.

### THE ADVANTAGE OF ROUTINE RECTAL EXAMINATION DURING LABOR.\*

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In spite of our most rigorous strife for the prevention of accidents incident to pregnancy, labor, and puerperium, they still remain very formidable factors. The following quotation was taken from the Children's Bureau Publication on "Maternal Mortality" (No. 19) which says, "according to evidence available the death rates from puerperal septicemia and from other diseases caused by pregnancy and confinement, during the twenty-three years ending in 1913 show no decrease. The death rates of only eleven states can be studied through a period of time (1901-1913) long enough to justify conclusions. Though the rates for each state vary considerably from year to year it will be noted that certain states show high average rates. Among these are the District of Columbia, Michigan, and Rhode Island, whose rates are 17.6, 17.1, and 16.8 per 100,000 of population."

This bulletin also presents statistics showing that among women between the ages of 15 and 44, puerperal septicemia and other accidents of pregnancy, labor or puerperium rank next to tuberculosis as a mortality factor. During the period of 1900-1910, 44 per cent. of this number of deaths were due to puerperal septicemia.

Haarer in summarizing 100,000 cases at the New York Lying-in Hospital (1918) says, "even though the mortality rates be low, it is disconcerting to find that the predominating cause of death, even in selected groups is puerperal infection. The one element of mortality in obstetrics of which we are inclined to boast, and that we ought to have most certainly under control, causes more than twice as many deaths as any other single complication."

Since the days of Carl Braun, the dangers of vaginal examination in labor have been acknowledged by all authorities. Even though rigid technic is followed in the preparation of the patient, the supplies, and attendant's hands,

we all know that we are subjecting our patient to a possibility of infection and have for this reason attempted to limit the number of examinations made. Today careful observation of labor, with its clinical manifestations, and routine abdominal palpation tell us much of the progress of labor. If, to this, we add more supervision by means of routine rectal examinations, vaginal manipulation will be required in but a small percentage of cases. We have been taught that there are certain indications and contraindications for interference in the presence of obstetrical complications. Why then can we not set certain indications for vaginal examination in labor? This surely would be a step forward in obstetrical art. In this paper I hope to show the great advantage of routine rectal examination during parturition.

Kroenig first suggested rectal as a substitute for vaginal examination November 20, 1893, in a paper read before the Obstetrical Society of Leipzig. The method was introduced in his clinic early in August, 1893, and in the three months covered by his report 90 per cent. of all labors were conducted by rectal examination alone. Emil Ries in January, 1894 corroborated Kroenig's teachings but determined the far wider range of its applicability. Even so, all our modern text books have failed to describe its advantages or possibilities.

About ten years ago, routine rectal examination during labor was established in the University of Michigan Maternity Clinic by Professor Reuben Peterson. From my observation in the clinic, which is primarily a teaching clinic, I am certain that rectal examination, supplementing abdominal palpation should entirely supersede vaginal manipulation in the conduct of normal labor, as well as in that group of cases known as borderline pelvis, where we are accustomed to give a thorough test of labor before resorting to operative interference. These are the most difficult of all cases to handle, as a definite prognosis can never be given until after a thorough test of labor. In many of these, cesarean is resorted to, and if so, it is extremely desirable that no vaginal examination shall have been performed, inasmuch as the latter always unnecessarily increases the danger of sepsis. Gross contractions of the pelvis on the other hand are easily recognized from inspection and palpation of the abdomen together with pelvimetry. Hence the main indications for vaginal examination will be either a failure of progress in a supposedly normal case, for which we have no satisfactory or adequate ex-

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planation, or the need of further knowledge prior to operative interference through the birth canal.

For rectal examination the patient does not need special preparation, if the ordinary obstetrical technic of simple enema, shaving, and scrubbing of the outlet, etc., has been carried out at the onset of labor. The dorsal posture I find to be the most acceptable for a satisfactory examination, although the lateral may be used, if one's technic is thus developed. The rubber glove used must be clean but not necessarily sterile, and should be used only for rectal examination, inasmuch as it cannot be safely sterilized for vaginal work by ordinary boiling. Anoint the index finger with sterile lubricant and then gently insert it through the anus, keeping the other fingers flexed in palm of hand and allowing the thumb to fall in one or the other groin crease, thus avoiding possible contamination of vulva. The finger once introduced should be moved about slowly and carefully, avoiding discomfort to the patient as much as possible. It is best to start the examination between contractions and to make a thorough examination, retaining the finger in rectum until the onset of a contraction, in order to observe the effect of the latter on the membranes, cervix, presenting part, and its relationship to the pelvic canal.

It is true one will at times mistake a fold in the vaginal wall for the cervical rim. This is particularly true of cases in which effacement occurs, but in which the external os, although thinning out greatly, dilates but very slowly, and is closely applied over the presenting part. If sufficient time is taken this mistake may always be rectified.

In discussing the advantages of this method I am going to present them from the standpoint of the three main factors of labor, which some one has aptly termed the three capital P's of labor, i. e. Birth Canal or Passage, Fetus or Passenger, and the Forces or Powers.

By rectal touch we can ascertain most points in regard to both the soft parts and the bony pelvis. We can estimate the thickness and resistance of the pelvic floor or perineum, the size of the vagina and the condition of the rectum itself. With the finger introduced at full length, we can feel the cervix and determine its position and relationship to the vaginal axis, its length, which tells us whether effacement, the first step in primiparous labor, has or has not been accomplished. In multiparous labor, effacement and dilatation occur synchronously.

If the cervix is effaced, we then notice the thickness and elasticity of the cervical rim, which in normal primiparous labor thins out gradually to paper thinness. In multiparous labor it remains thick and rubbery to the end. Next, inserting the finger tip inside of the cervical rim, we attempt to estimate the amount of cervical dilatation by entirely circling the rim, or by estimating an arc of the same. Complete dilatation should measure approximately ten centimeters in diameter. For this reason we estimate in centimeters or may compare the actual dilatation to known circular objects, as coins, etc. It is possible to follow the rim in some arc of the pelvis, until it begins to retract over the presenting part. The membranes may or may not be felt bulging into the upper vagina. Tumors of lower uterine segment, cervix, vagina, bladder or in the posterior culdesac may be well outlined, many times more satisfactorily than upon vaginal.

The shape, direction and movability of the coccyx can be felt. This should always be noted, as a fixed or ankylosed coccyx at times prevents delivery of the head at the outlet. The ischial spines are felt and noted as to length and prominence, as occasionally the descent of the head will be prevented by these bony projections. The curve of sacrum and possibly the promontory may be felt, as well as the posterior half of the pelvic inlet palpated, this being the most important portion of the inlet.

As to the fetus or passenger, the rectal finger will at once tell us whether the Cephalic or Podalic pole is presenting. Whether or not engagement had occurred can be told by the amount of fixation of the presenting part, and its relation to the bony pelvis, especially to the spines. Usually one is able to diagnose position by recognizing the sutures or fontanelles as well by rectal as by vaginal, provided the cervix is sufficiently dilated. This latter point is essential even for a satisfactory vaginal examination. Abnormalities of presenting parts may usually be easily felt, as the crepitation which accompanies fetal death; the wider sutures and enlarged fontanelles of hydrocephalus, etc. In my opinion rectal examination is entirely as satisfactory as the ordinary vaginal, except in cases where the hand must necessarily be introduced into the lower uterine segment and an ear or shoulder palpated before accurate position is made out.

Lastly, by a combination of abdominal and rectal examination we can form a good idea of the regularity and strength of the Forces or

Powers, and can prognosticate as to delivery. With the onset of a contraction, the membranes may be felt to bulge through the cervix. If they fail to do so, they have either been ruptured or are tight over the presenting part and are very apt to obstruct the progress of labor, particularly if thick and resistant. This may be a proper indication for vaginal examination and for artificial rupture of the membranes, provided the cervix is one-half to two-thirds dilated, and there has been little or no progress made for some interval of time. The effect of each contraction on the thickness and size of the cervical rim can be noted, as well as any descent of the presenting part. The latter will many times be felt to undergo movements of rotation, flexion or extension, which furnish us further information as to the probable mechanism of delivery. In case the pelvis and fetus are normal, the mechanism is found normal; but if an abnormality exists, the presenting part usually will be felt to undergo an abnormal movement in an attempt by nature to adapt the fetus to the pelvis.

Other complications of labor can usually be first diagnosed by rectal examination. Following early rupture of membranes prolapsed cord has several times been diagnosed in the clinic. Whether or not it is still pulsating can easily be felt. Edema of the anterior cervical lip, which sometimes occurs due to arrest of the head high up or to failure of retraction, can also be diagnosed. Both of these conditions of course are proper indications for vaginal examination and treatment.

As an illustration of the practical use of this method, I would cite a case which has recently been cared for in the clinic. A woman of thirty-four was admitted complaining of pain in the lower left abdominal quadrant. The temperature was ranging from 100 to 103 degrees and there was definite tenderness in the lower abdomen. No definite muscle spasm, however, was felt. Leucocytosis was about 20,000. The clinical diagnosis prior to admission was acute pelvic inflammatory disease with probable pyosalpinx, complicating an eighth month normal pregnancy. In this case vaginal examination was found very unsatisfactory. Rectal examination, however, showed the primary cause of the trouble to be a rectal stricture located about two inches from the anus with a secondary infection of the perirectal tissue above it. The pelvis itself was normal and this patient, subsequently to drainage of the perirectal abscess, delivered herself normally of

twins and underwent a normal puerperal convalescence. This, I believe, illustrates the fact that no examination of a pregnant patient is complete without rectal examination, and that the latter should not be omitted in this type of case any more than in routine gynecological examinations.

There are few if any objections which can be raised against rectal examination. Possible contamination can always be prevented, if a clean rectal glove be employed, and care be taken in avoiding the labia and introitus. If too frequent examinations are made, the rectum may become slightly traumatized and tender, but if the gloved finger is carefully anointed and carefully introduced, this objection may be avoided. The examination then becomes practically painless and annoys the patient usually far less than vaginal manipulation, except in cases where hemorrhoids are already present.

Since this method was introduced in our teaching clinics, students have been able to follow and interpret the progress and mechanism of labor much more intelligently than heretofore. For the busy practitioner it becomes a boon, as it is a time saver and with experience will allow him to prognosticate as to the duration of labor and also to anticipate delivery. When in doubt as to the findings by the abdominal and rectal routes, a careful vaginal may always be done, but for the ordinary normal case, the latter should be found necessary but very infrequently. Certainly not over five to ten per cent. of cases show proper indications for interference of any type, and in my experience all but this small percentage can be properly conducted without vaginal manipulation. Where combined abdominal and rectal examination is inconclusive, or in sudden emergencies, or in preparation for operative work through the birth canal, careful aseptic vaginal examination should always be performed.

In summarizing the advantages of rectal examination, I would make the following points:

(1). It is easily and quickly performed, and requires no special preparation of either patient or physician.

(2). It may be frequently repeated and plenty of time may be taken for thoroughness.

(3). It is practically painless.

(4). The mechanism of labor can be accurately followed and abnormalities as to birth canal, fetus, or forces noted.

(5). Rectal disease will be diagnosed and the condition of bowel whether empty or not noticed.

(6). There will be no danger of sepsis.

(7). Last but not least, the obstetrician will have more peace of mind and more freedom from blame in case puerperal complications arise.

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## DISCUSSION.

DR. ARTHUR R. MOON, Detroit: Mr. Chairman—I have nothing much to add, but think it a very practical procedure to adopt, particularly for the man in general practice who may not have gloves with him and the necessary things for making a vaginal examination. This can be effected and a great deal can be learned by rectal examination.

DR. HERBERT W. HEWITT, Detroit: Mr. Chairman—I was interested in the Doctor's paper and in the manual rectal examination. It has been only recently that I have practiced it at all and it has come to me from some of the interns from outside of Detroit. I became interested in the matter and tried it, not thinking that I could satisfy myself about the progress that was being made. A great deal can be discovered, especially in the early stages, and it is a very safe procedure to follow, especially outside of the hospital. I think it behooves us all to practice it as much as we can. The more we use it the more we learn about it. At first it did not seem to be very satisfactory, but I think it will come to be used a great deal.

DR. C. HOLLISTER JUDD, Detroit: Mr. Chairman—I think there is a place to use this method, but in teaching students there is always the thing to consider—the duty to the patient and the duty to the student. It is very difficult to find the sutures and the fontanel in the baby's head, and you feel from that point of view you want the men to make all the vaginal examinations possible because it is so hard for them even to find the cervix. I do not believe it is necessary to make a vaginal examination except in some certain cases. Perhaps you are looking for a face presentation and in those instances your hand has to go pretty well up to find what you are looking for. It seems to me you can make a very good vaginal examination if you have two gloves. In the hospital they always give us one glove, but we should have two. We should then spread the lips of the vulva very wide and if we do that we can do a vaginal examination without very much harm. I would like to know what Dr. Peterson thinks about that. Are the men doing more harm than good—are they going to use that knowledge when they go out?

If you have to carry two or three pairs of gloves along, one for rectal work and one for vaginal,

you may get them mixed up, and I do think that you may contaminate the vagina after doing the rectal examination if the hands are not very thoroughly washed.

DR. RHODA FARQUAHRSON, Detroit: Mr. Chairman—We have had no experience at the hospital with rectal examination. I find in the first place that the student cannot recognize the cervix by digital examination, but they do learn and I think that perhaps with the enlargement of our clinic which we hope to have, with a larger number of patients for each student to see, that it might be possible to have vaginal examinations only in the early cases, where you want to teach the student about the cervix. I would like to try this method and I mean to do so.

DR. REUBEN PETERSON, Ann Arbor: Mr. Chairman—As to whether the rectal method is a correct teaching method, our experience at the University has shown that it is extremely practical. Our students have had a good deal of experience with the nonpuerperal woman before they reach the surgical ward, so all the ordinary vaginal examination has been taught them but in the maternity ward they are taught the rectal examination and it has proved extremely satisfactory. Because no matter how careful you may be in teaching a student, there is a certain element of danger to the person who is unaccustomed to making vaginal examination of a woman in labor which can be avoided. Everything that can be taught by vaginal examination can be taught by rectal examination. What has just been brought out is perfectly true. Those of us who were taught all our knowledge by vaginal examination have to revise that knowledge when the examination is made through the rectum. On the other hand, the student can be started in by rectal examination and can very readily be taught all the points that Dr. Bottsford has brought out. In practice the rectal method cannot be too highly spoken of. Of course all sepsis does not come from examinations. This was recently demonstrated in a private case at Ann Arbor where this method was practiced and the woman had a normal delivery, but she had a bad case of sepsis. The history of that patient showed reasons, because the husband had been infected. So all sepsis does not come from vaginal examination, but where we practice vaginal examination and the woman does have infection, every honest practitioner wonders whether there might not have been a slip in the technic and he might not have infected her. So if she does have infection we have a much clearer conscience if we have never introduced a finger into the vagina. But to my mind, the best of all is in the borderline cases where we do not know whether we will have to do a Caesarean section or not. It has been shown in statistics that the Caesarean section increases in danger according to the number of vaginal examinations that have been made. Consequently, if we conclude that the Caesarean section is the operation of selection, we perform it with a very much greater feeling of safety if no vaginal examination has been made. In the maternity clinic all the instruction is given by my assistants and where I am called to a case in consultation for possible Caesarean section, and

I am told that no vaginal examination has been made, I have a much greater feeling of security if, in my judgment, a Caesarean section should be made. From that standpoint alone—and no one can say when labor will become abnormal, although measurements have been made and there is apparently a normal pelvis and a normal child, we cannot say that that labor will be normal, and the patient will be in much better condition if no vaginal examination has been made.

DR. RHODA FARQUAHRSON, Detroit; Mr. Chairman—May I say a few words more? This is something that we can emphasize in our prenatal clinic, and that is the field of external examination. We teach our students that they should be able to tell from an external examination everything that can be learned from an internal examination, except the condition of the cervix. And they make an internal examination only after they have made an external diagnosis. This is required of them. I feel that many more internal examinations are made than are necessary, and I feel that if in the clinic we could teach the student to make his diagnosis entirely from the external examination that we would be doing a great service to the profession in general.

DR. E. W. CASTER, Detroit: Mr. Chairman—I have been interested in hearing the discussion of those who are favorable to this method. I do not entirely agree with those who have so ably defended it to-day. As Dr. Peterson has said, all infections do not come from vaginal examination and my experience is that it is not so great a source of danger as the rectal examination. Unless care is observed there is danger of infecting the vagina, but to my notion there is danger of injuring the rectal mucosa and of getting infection through there. In my experience also it has been much more objectionable to the woman who has been examined than to be examined through the vagina. I do not think it is a very good method to follow out in general practice.

DR. BENJAMIN A. SHEPARD, Kalamazoo: Mr. Chairman, gentlemen—I have only been out two or three years, but I find that to me this method is a very great help in more ways than one. To begin with, in general practice you usually get a "hurried call" and in some cases, especially in primiparas they are quite excited, and as a young practitioner you may also be excited, and you are anxious to know how far everything is advanced and it does not take very much time to make a rectal examination. I will admit that when you are beginning you do not feel much and do not get much out of it, but in using it you find it very satisfactory. You can tell the advancement and make a quite accurate decision on the length of time before delivery, and how much time you have for preparation and how fast you have to hurry in order to get things prepared, and in talking with other practitioners it is rather startling to see how many will go in and make a vaginal examination without any preliminary preparation. It started me to thinking and I inquired into the work of several of those practitioners in regard to infections and asked them to make a quite careful study of certain cases, and I found that although some of them did not get any infection, many of them have what they call "catching cold," have a discharge and temperature for a

week or ten days, and so on. I find that the rectal examination is very satisfactory after some experience in using it. It saves time, and it is very seldom that I find it necessary to make a vaginal examination after making the rectal.

DR. LESLIE L. BOTTSFORD, Ann Arbor, (closing): Mr. Chairman—Evidently there are a great many more vaginal examinations made than are necessary in any sense of the word. As to what the Doctor said about the danger of infection coming from the rectum or from the rectal mucosa, I have never seen a case. It is conceivable that if sufficient examinations were made, or sufficient trauma was produced, that it might happen. In my experience not more than three or four rectal examinations are necessary in a normal labor. I imagine that most men perform more than that number of vaginal examinations.

Of course, vaginal examinations, if carefully performed are not necessarily a source of infection for the patient. That is true. We perform vaginal examinations upon certain cases with careful technic, but it is perfectly impossible to do an aseptic vaginal examination with one glove. Even with two gloves there is danger, as I have had an opportunity to notice in working with an associate in another clinic. His technic and mine, as well as that of another colleague, differed somewhat. This man as the head crowned liked to introduce two or three fingers into the vagina, separating the labia, and to attempt to gain increased flexion of the head. It was peculiar that in his group of cases there was always a larger percentage of febrile cases—not true sepsis, but a higher percentage of mild infections. So I think, that if the rectal examination can be substituted for the vaginal, it can be made use of by any one who is willing to give it a trial, and that he will sooner or later be quite satisfied with it. Of course, it takes time, and in starting to use the rectal examination I would advise them to continue for some time with their former technic, but after each vaginal examination they should do a rectal and keep in mind the stages of labor at that time. If they take this up systematically, they will soon become quite adept and in a short time find it very satisfactory.

## THE DIAGNOSIS OF PEPTIC ULCER.\*

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From the standpoint of therapeutics, the diagnosis of peptic ulcer is a matter of the utmost importance. The treatment of the case must of necessity be governed by the diagnosis. The medical treatment must extend over a long period of time and should not be undertaken unless the diagnosis is reasonably certain. If the case is to be treated surgically, accuracy in diagnosis will greatly expedite the work of the surgeon. A careful diagnosis may

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differentiate between cases that are surgical and those that may be treated best medically.

It is the purpose of this paper to review a series of 82 consecutive cases in which the diagnosis of peptic ulcer was made and to present what has seemed to us to be the more important diagnostic features. These cases were examined within the last three years in collaboration with Dr. A. W. Crane, having been referred to us for diagnosis. In each case the examination consisted of a case history, the physical examination, laboratory examinations of the blood, urine and stomach contents and a roentgen examination. These examinations were not confined to an examination of the gastro-intestinal tract but were made as complete as possible in order to discover any pathological conditions present. In a large proportion of these patients other pathological processes in addition to the ulcer were found. As a rule the patients were seen on two or more consecutive days. Except in a very few cases, no opportunity was had for the observation of symptoms under hospital control.

Of the 82 cases examined, the diagnosis of gastric ulcer was made in 15 cases, 11 of whom were male and 4 female. The diagnosis of duodenal ulcer was made in 67 cases, 52 of whom were male and 15 female. These findings are in agreement with those of the large surgical clinics, in which it has been found that a large majority of patients with peptic ulcer are males and that duodenal ulcer occurs much more frequently than gastric ulcer.

The typical ulcer history is classical. This consists of a dyspepsia which as a rule has persisted over a long period of time. Pain is usually the most constant symptom. The pain is as a rule epigastric. It is variously described as gnawing, burning or heavy. The pain is definitely related to eating, and comes on in from 30 minutes to 3 or 4 hours after eating. The patients with gastric ulcer usually complain of pain more promptly after eating than do the cases with duodenal ulcer. The pain is ordinarily relieved temporarily by eating or the taking of alkalies. Many of these patients complain of nocturnal pain; being awakened at night when stomach is empty. The pain is not always entirely epigastric. Some patients complain of thoracic pain which usually occurs in the lower left chest. Some of the patients have complained of lower abdominal pain. Other dyspeptic symptoms frequently complained of are nausea, vomiting and belching with regurgitation of sour fluid. Hematemesis and blood

in the stools are further evidence in favor of ulcer that are often brought out in the history. There may be a marked tendency to seasonal recurrences. This is especially true in the cases of duodenal ulcer. The symptoms occur in spells which last from one to several weeks with remissions during which the patient may be entirely free from symptoms.

Of the 67 cases of duodenal ulcer which we have studied, 63 have complained of epigastric pain. Of the 15 cases of gastric ulcer, all presented this symptom. Six of the duodenal cases and one of the gastric cases complained of pain in the lower part of the chest. Lower abdominal pain was manifested by 12 of the cases of duodenal ulcer and two of the cases of gastric ulcer. Twenty-nine of the duodenal cases and five of the gastric cases gave a history of being awakened at night by pain. Thirty-nine of the duodenal cases gave a definite history of temporary relief from the ingestion of food. Of the gastric cases 10 gave a history of food relief. A definite history of relief from the taking of soda was obtained in 30 of the duodenal cases and 8 of the gastric cases.

In the entire 82 cases, a history of hematemesis was obtained in only 4 cases, 2 being duodenal and 2 gastric. This percentage of cases with a history of vomiting blood would seem unusually low. In a series of 743 cases of peptic ulcer reported by Baetjer and Friendenwald, 186 gave a history of hematemesis. Eusterman from the Mayo Clinic reports 30 per cent. of their cases as having a history of hemorrhage, but does not state the percent of cases in which the blood was in the vomitus or the stools. A history of blood in the stools was obtained in 8 of our series of duodenal ulcer cases and in 2 of the gastric ulcer cases. There was, then, a definite history of hemorrhage in 16 $\frac{2}{3}$  per cent. of the series. This does not include cases in which the history was uncertain. Many of the patients thought they had had black stools at times but were not sure whether it was related to the taking of bismuth or iron. Vomiting was a pronounced symptom in 19 of the duodenal cases and in 5 of the gastric cases. The duration of the dyspeptic symptoms is often a matter which is very difficult to elicit in the patient's history. Of the duodenal cases, 22 of the patients gave a history of dyspeptic symptoms from one to five years, 12 gave a history of symptoms from five to ten years, 17 gave a history of more than ten years and in the remaining 16 the duration of symptoms was indefinitely stated. Of the

gastric ulcer cases, 4 had had dyspeptic symptoms from one to five years, 4 from five to ten years and 3 over ten years and in 4 the duration of the symptoms was uncertain.

It is of interest to note that an appendectomy previous to our examination had been done in 9 of the duodenal cases and 1 of the gastric cases.

The physical examination in cases of peptic ulcer is probably the least valuable of any of the means of diagnosis. Tenderness in the epigastrium may usually be elicited. If the ulcer is perforating and extends to a point not far removed from the peritoneal covering of the viscus, there is likely to be muscular rigidity on the right side. The acute perforating cases give the clinical picture of a peritonitis and may be mistaken for peritonitis developing from other sources. In the 67 cases of duodenal ulcer, 44 had definite epigastric tenderness and 13 of the 15 gastric ulcer cases had this sign.

The relation of focal infection to peptic ulcer has been emphasized by many writers. In observing these cases we have been much impressed with the large proportion that have shown infection about the teeth. Thirty-four or 41.4 per cent. of the series had definite evidence of such infection.

Of late, laboratory methods of examination have rather fallen into disfavor in the diagnosis of gastric disease. The information to be obtained from a gastric analysis is, however, of undoubted value in the diagnosis of peptic ulcer. In our experience hyperacidity has been the rule. In doubtful cases a marked hyperacidity might determine the diagnosis. We have not made the diagnosis of peptic ulcer in any case which showed a total lack of hydrochloric acid in the secretion, although we have observed a fairly large series of cases showing this condition. Many of these patients manifested symptoms not unlike those manifested by patients with hyperacidity but were clearly not cases of ulcer. It must be borne in mind, however, that hyperacidity is associated with many chronic diseases other than ulcer. During the last two years we have been using the Rehfuess tube and examining the stomach contents by the fractional method. The patient is given a bread and water test meal and the Rehfuess tube introduced at the end of one-half hour. Aspirations are made at intervals of fifteen minutes—five or six fractions being removed. Many of the cases may show a low acidity or a total lack of acid in the first or second aspirations, and then develop a normal acidity or even an hyper-

acidity in the later aspirations. Undoubtedly many cases examined by the old method of a single aspiration were labeled as achylia or subacidity when they should have been classed as normal acidity or even hyperacidity. Of the 82 cases, 49 were examined by the fractional method and 33 by the single aspirations. Of the gastric cases, 5 had an acidity between 40 and 60, 10 an acidity above 60. In classifying these cases as to acidity, the highest reading obtained in the fractional method is considered. These figures are for total acidity. Of the duodenal cases 3 had an acidity below 40, 13 between 40 and 60, and 51 above 60. Our conclusion, therefore, would be that hyperacidity is the rule and that subacidity is not often found in frank cases of ulcer.

The stomach tube gives considerable information as to the rate at which the stomach empties. The amount of gastric contents that can be removed at the last aspiration indicates how complete has been the process of emptying. Our patients were not given a motor meal the night before the aspirations were made and we have no figures to give as to food remains. Many of the cases of obstruction, however, showed some food residue from the previous meal. Blood in the gastric contents was found on several occasions but not much importance was attached to this because of the possibility of trauma with the tube.

All of the 82 cases were examined roentgenologically. In general the routine of the roentgen examination was the administration of a contrast meal consisting of four ounces of barium sulphate in a glass of water between the hours of 11 and 12 in the forenoon. The barium was taken with the patient in the upright position and the filling of the stomach observed in this position on the fluorescent screen. In many of the cases the duodenal cap was studied by forcibly filling the cap with the palpating fingers. In this way the cap may be filled under pressure and duodenal deformities more satisfactorily studied. A single plate was usually made with the patient in the upright position. The patient was then placed in the horizontal position and the stomach and cap observed in both supine and prone positions. In cases of suspected duodenal deformity or filling defects near the pylorus, serial plates were made showing either four or eight views of the antrum pylori and duodenal cap. The patient was then instructed to take a light meal, preferably a general mixed diet and to observe the time at which the meal was begun.

The emptying time was calculated from the time of the ingestion of the meal which was taken following the barium. Unfortunately for our statistics, we were unable to carry out this routine in all of the cases observed. The study of the stomach motility would seem to be most ideally carried out where the normal physiology is least interfered with. It has seemed that this can best be done with the stomach under its normal load. The patient has been asked to take a light meal immediately after the ingestion of the barium rather than to take the barium mixed with the meal. It has seemed to us that if the patient eats under normal surroundings and eats what is appetizing to him, the normal physiology will be less interfered with than by eating a barium impregnated food in a doctor's office. The patients were observed again at the end of two hours and one-half or three hours, when the stomach was seen to be emptying rapidly and in all cases at the end of six hours. Patients were observed again the following day at which time as a rule a second contrast meal was administered.

The roentgen signs of peptic ulcer have become fairly well standardized. The niche and the accessory pocket are taken as proof of the presence of gastric ulcer. There are other signs which are very suggestive of gastric ulcer, but which are less conclusive than the niche and accessory pocket. These are: first; an incisura usually on the greater curvature; second; hour-glass stomach which may be either spasmodic or organic; third; six-hour retention; fourth; filling defects at or near the pylorus. A constant deformity of the duodenal cap is ordinarily considered as the X-ray proof of a duodenal ulcer. While this sign may not be as entirely reliable as the niche or accessory pocket in the case of gastric ulcer, it is quite usually accepted as proof of the existence of ulcer in the duodenum. Hyperperistalsis in connection with a six-hour gastric residue is also a strong indication of this condition. Tenderness localized over the duodenal cap under the fluorescent screen, is probably of some value but is generally considered of less value than the other signs mentioned.

Of the fifteen cases of gastric ulcer, the niche was found in three. An accessory pocket did not occur. One case was rayed following an operation for the repair of a perforation and the nichen sign which was undoubtedly present before the operation was replaced by a filling defect. Eleven of the cases of gastric ulcer showed a massive six-hour residue. Two of these

showed pyloric obstruction. Seven of the cases had an irregularity in the region of the pylorus due either to spasm or the callosity of the ulcer. There was one case of hour-glass stomach. Two cases showed a persistent incisura.

In the 67 cases of duodenal ulcer 57 showed constant definite duodenal cap deformity. There was a marked gastric hyperperistalsis in 61. Eighteen were observed to have the stomach empty at the end of two hours. Unfortunately not all of the patients of this series were observed at this interval so that this number does not represent the total number empty at the end of two hours. In 11, there was a definite gastric residue at the end of six hours. There was a pyloric obstruction in five. Cap tenderness was observed in 21 of these 67 patients.

In reviewing the roentgenological evidence of ulcer, in the gastric cases it will be seen that the positive nichen sign was present in three cases or 30 per cent. In these cases the history was that of ulcer, epigastric tenderness was marked and a hyperacidity was present. The niche is undoubtedly positive proof of ulcer. A six-hour residue was present in 11 or 73.3 per cent. of the gastric cases. This in itself is insufficient proof of ulcer and must be supported by other evidence. It has always to be borne in mind that other causes may give this sign. Extra-gastric causes, such as gall-bladder disease, appendicitis and duodenal ulcer must be considered. Six or 40 per cent. of our series showed irregularity in the gastric contour near the pylorus. In practically all of these cases the peristaltic waves seen fluoroscopically were interrupted at the point where the filling defects were seen. These defects must be differentiated from those caused by cancer or disease processes outside of the stomach. Two or 13.3 per cent. had definite evidence of pyloric obstruction. In such cases it is sometimes impossible to be sure on which side of the pyloric ring the ulcer is present. The diagnosis between an obstructive duodenal ulcer and an obstructive gastric ulcer is sometimes a matter of great difficulty. In one of our cases of gastric ulcer, roentgen signs were absent and the diagnosis was made on the history, physical signs and the hyperacidity.

Of the cases diagnosed as duodenal ulcer, 57 or 85 per cent. showed a constant cap deformity. This is the best roentgen evidence of duodenal ulcer. Possibilities of error are adhesions about the cap due to disease outside the bowel and the mistaking of an imperfectly filled cap for a deformed one. The

method employed by Carmen and others of filling the cap under pressure is of great aid in avoiding this latter source of error. Deformities due to imperfect filling are not as a rule constant but vary in the different plates. A hyperperistalsis with six-hour residue is considered by Carmen to be conclusive if gastric ulcer can be excluded. Eleven of our cases showed such a residue associated with the duodenal type of peristalsis. Hyperperistalsis and rapid emptying is considered by some observers to be good proof of ulcer. In our series we have not taken this as proof of ulcer unless there were other definite indications of this lesion. Twenty-one of our series showed cap tenderness and we have considered this to be a help in arriving at a diagnosis.

The value of the roentgenological examination in the diagnosis of abdominal disease must be estimated from a consideration of negative findings as well as positive findings. To be able to eliminate ulcer as a cause of abdominal symptoms, does much to clarify the diagnosis. Negative findings for ulcer may make the diagnosis of gall-bladder disease or appendicitis clear.

As already stated in the beginning of this paper, these cases were sent to us for diagnosis. None of them were under our immediate observation for either medical or surgical treatment. They came from many different sources and were treated by physicians who had different ideas as to therapeutics. Of the 82 cases, 17 were operated upon. Ulcer was found in 12 of these cases. In one of the cases diagnosed as probable gastric ulcer with obstruction at the pylorus, the surgeon reported that the ulcer was on the duodenal side of the pyloric ring. In another case in which the diagnosis of both duodenal and gastric ulcer was made, the surgeon reported duodenal ulcer. A third case in which the diagnosis of duodenal ulcer was made the surgeon reported gastric ulcer with complete recovery after gastroenterostomy. In one case in which operation was advised, the operation was deferred and the patient died with symptoms of acute perforation. The attending physician reports that the patient died from a perforating ulcer but no autopsy was made to determine the exact site of the ulcer. In five of the operated cases the surgeon reported that no ulcer could be found. One case had a general peritoneal carcinomatosis. On account of the advanced carcinomatous conditions found, the abdomen was closed without further investigation. In a second case in which the diagnosis

of chronic appendicitis with ulcer was made, the surgeon reported that subsequent to our examination the patient had a hematemesis. Later the appendix was removed and at this time the ulcer was not found. There was a complete recovery following the appendectomy and the use of alkalies. In a third case in which the diagnosis of ulcer was suggested, but not made positively, a chronic appendicitis was the only pathology demonstrated by the surgeon. In this case the diagnosis of duodenal ulcer was suggested by the deformity of the duodenal cap. The patient's symptoms were not those of ulcer and the roentgenological evidence was the only evidence favoring ulcer. A fourth case in which the diagnosis of duodenal ulcer was made was reported as multiple cysts of the liver and right kidney. The nature of the cysts was not demonstrated. A fifth case, in which the diagnosis of probable duodenal ulcer was made, was reported from surgical findings as chronic appendicitis. This case was one in which the diagnosis of ulcer was made on hyperperistalsis with extremely rapid emptying, the stomach being empty at the end of fifteen minutes. The patient also exhibited considerable tenderness directly over the duodenal cap. He did not, however, have a good ulcer history.

While the diagnosis of ulcer made by clinical and laboratory methods may be open to a certain percentage of error, the surgeon cannot be held to be entirely free from the possibility of diagnostic error in dealing with ulcer. Especially is this true of duodenal ulcer. For years surgical and postmortem statistics showed that gastric ulcer was of much greater frequency than duodenal ulcer. Due largely to the surgical work of the Mayos and the perfection of roentgen technic, these statistics have been shown to be incorrect. Gastric ulcers unless they be high upon the greater curvature or on the posterior wall are usually fairly easy to demonstrate with the stomach exposed. They can be felt and as a rule seen. Duodenal ulcers are much more difficult of demonstration. Carmen who is a daily attendant at the Mayo operative clinic says (concerning duodenal ulcers) "A recent ulcer may be so small and shallow that no marked evidence of it can be seen on the outer coat of the bowel; its presence is determined by the surgeon by palpation of the slightly thickened ulcer area, which may also be hyperemic, or may show petechiae after rubbing with the fingers or with gauze. With the majority of ulcers, however, external scarring is visible, but this may occur without marked

contraction or deformity." Wm. J. Mayo says: "The mucosa of the duodenum is thin, smooth and granular and chronic duodenal ulcers may not, therefore, have the characteristics we have learned to expect from experience with gastric ulcers." This is undoubtedly the reason that duodenal ulcers have been overlooked in the past by surgeons at operation or by the pathologist at autopsy. Mistakes may sometimes be made by the surgeon because of inadequate exposure of the parts through a small incision. Except in large clinics where many cases of ulcer are appearing for operation, the failure of the surgeon to find ulcer does not always indicate that the internist or roentgenologist is in error in diagnosing its presence.

The accuracy of the diagnosis in the unoperated cases cannot be determined beyond question. The fact that so many of the cases have improved when put on ulcer therapy may be taken as some indication of the correctness of the diagnosis. So many factors however enter into this therapeutic test that conclusions drawn from it must be uncertain.

Of the cases not operated 33 have been reported markedly improved under treatment by alkalis. Fourteen are reported to continue to have symptoms of pain. Seventeen of the cases have not been reported, either having been examined recently or having been lost track of. Thus the unoperated cases in our series show a very gratifying result from medical treatment judging from the reports which we have received. Granting that the diagnosis be correct, failure in medical treatment may indicate one of two things. It may mean that the ulcer is not amendable to medical treatment, or, what seems more likely, it may mean that treatment has not been thorough and sufficiently prolonged. This is often due to lack of co-operation on the part of the patient, but probably more often is due to a lack of appreciation by the physician of the details of a thorough going medical cure. Patients are willing to go to bed for a surgical cure but rebel at such a procedure in medical treatment. To be successful this treatment should be carried out with the patient in bed under absolute control for several weeks. The dose of alkali should be large enough to neutralize the acid of the stomach and keep it neutralized. This may be tested out by frequent aspirations. The dose of alkali as ordinarily given is altogether inadequate. The treatment must be carried out for several months in order to insure healing. Many of the medically treated cases recur because med-

ical treatment is discontinued as soon as the symptoms are under control. The success of the Sippy clinic in the medical treatment of ulcer is undoubtedly due to careful attention to these details which are so difficult to carry out in private practice.

The series of 82 cases of ulcer may be divided into three classes. First: those which gave a typical ulcer history, had the clinical and laboratory findings consistent with ulcer and had the X-ray evidence of the disease. In this class are 47 of the duodenal and 11 of the gastric cases. Of the 47 duodenal cases in which the diagnosis seemed fairly certain from all points of view, 8 were operated. In 6 of these cases the ulcer was found and in two was not found. One of these cases in which the ulcer was not found was the case in which the surgeon reported that a hemorrhage followed our examination but that he was unable to demonstrate the ulcer later when he operated for the removal of the appendix. The other case was the one in which the surgeon reported multiple cysts of the liver and right kidney. Of the 11 cases of the gastric ulcer in which all the findings indicated ulcer, 6 of the cases were operated and the ulcer found in all. One other died with symptoms of perforation.

The second of the classes into which we have divided our cases are those in which the X-ray evidence of ulcer is fairly conclusive but the history is not entirely typical of ulcer. Of these cases there were 11 diagnosed duodenal ulcer and one diagnosed gastric ulcer. Of the 11 duodenal cases, two were operated and in neither case was an ulcer demonstrated. One of these cases was the one of general carcinomatosis of the peritoneum. This patient had a marked cap deformity with a hyperperistalsis and hypermotility and with a total acidity of 64. She did not have an ulcer history. The second case was one in which the surgeon reported a chronic appendix with no ulcer. This patient did not have a good ulcer history but had a deformity of the duodenal cap with hyperperistalsis and hypermotility marked tenderness over the cap and a total acidity of 64. In this case the diagnosis of duodenal ulcer was not made positively but the attention of the surgeon was called to the X-ray evidence of duodenal ulcer.

The third of the classes is made up of those in which none of the evidence seemed conclusive but in which the diagnosis of ulcer seemed most likely to be correct. Of these cases there were seven cases diagnosed as duodenal ulcer

and three diagnosed as gastric ulcer. Of these only one case was operated and the surgeon was not able to demonstrate the ulcer. This was a case in which the history was not especially suggestive of ulcer but the diagnosis was suggestive by the very marked hyperperistalsis extremely rapid emptying and the cap tenderness associated with a hyperacidity. Of the other 6 duodenal cases in this class none showed a constant cap deformity, but had some of the other X-ray signs of duodenal ulcer.

There are some conclusions to be drawn from this study. First: The necessity of a careful case history has been impressed upon us. The patient should be allowed to tell his symptoms and this statement should be supplemented by questions. Important features of the history should be the character and occurrence of pain, its relation to eating, relief from soda, whether or not it is nocturnal and its periodicity. The duration of the symptoms, the occurrence of vomiting, hemorrhage, etc. should be brought out. The diagnosis of ulcer is not often justified in the absence of a good history of ulcer symptoms.

Second: The stomach tube gives valuable information in the diagnosis of ulcer cases. Hyperacidity is the rule. The fractional method is superior to the single aspiration. Pyloric obstruction and hypermotility can often be determined by the stomach tube.

Third: Physical examination is the least valuable of the diagnostic methods, but should be carefully carried out. Evidences of focal infection are found in large a proportion of ulcer cases.

Fourth: The Roentgen examination gives information that can be obtained in no other way. The routine X-ray examination of cases of suspected ulcer should be made in all cases. Information thus obtained may be as valuable as that obtained at a surgical exploration of the abdomen. Negative X-ray findings are often as valuable in the exclusion of ulcer as positive findings in determining the presence of ulcer.

#### DISCUSSION.

DR. CHARLES D. AARON, Detroit. This is a very practical paper, and I can only endorse everything that has been said in it.

While a callous ulcer can be readily recognized by the Roentgen ray, unfortunately we cannot make a diagnosis of a florid ulcer in this way. We must depend upon other methods.

For determining the presence and location of gastric or duodenal ulcer, the "string test" devised by Einhorn has been found valuable. The stomach being empty, the patient swallows, pre-

ferably at night, the Einhorn duodenal bucket attached to a braided silk string 85 centimeters long which is knotted just before removal at the level of the upper incisor teeth. A loop at the upper end of the string is placed over the ear to prevent the upper part of the string from passing into the stomach. The bucket is withdrawn on the following morning and the string examined for a red or brown stain. The lower end of it is found to be yellow, and the bucket contains bile mixed with mucus, provided it has passed the pylorus—which it invariably does in from two to eight hours if there is no obstruction at the pylorus. Should the bucket fail to pass into the duodenum, a smaller one is used the succeeding night, and in this manner an approximate idea of the caliber of the pylorus may be gained. By measuring the distance from the knot in the string to the red or brown stain (should there be one), we are able to definitely localize the ulcer. If the stain is 39 to 42 centimeters from the incisor teeth, the ulcer is located at the cardia; if 45 to 50 centimeters, at the lesser curvature; if 53 to 56 centimeters, at the pylorus; and if over 59 centimeters, in the duodenum. I have substituted a large porcelain bead for the Einhorn bucket and find that it serves equally well. If this test be made several times on one individual, and each time a red or brown stain is found at about the same distance from the teeth, the clinician may be sure that a localized lesion of the gastric mucosa exists, which is probably ulcer. This test gains in value the more I use it.

DR. HUGO FREUND, Detroit: I think it is so important a subject that it deserves a very free discussion. I think all the members should take part in it.

To my mind, gastric ulcer or duodenal ulcer, is of such importance in gastro-intestinal work that it should at all times be considered in endeavoring to arrive at some definite conclusion when the patient complains of abdominal symptoms. We all know that the symptoms of ulcer in a typical case are quite suggestive. However, the presence of a latent ulcer is not always readily brought out by the symptomatology. In such cases we rely upon tests and especially upon the radiographer to assist us in the diagnosis. However, with all that, I believe and am firmly convinced that probably the most satisfactory method of arriving at a conclusion in regard to gastric ulcer is a carefully taken history. I don't think it is outside of the realm of any physician to make what should be a clear cut concise statement of the patient's symptoms. Gastric ulcer, from its symptomatology can very readily be diagnosticated by a thoroughly taken concise history. I want to emphasize that because there are no group of symptoms which point more closely to gastric pathology than some of the typical things a patient complains of in gastric ulcer. I go so far as to say that I believe that sixty per cent. of the value of making the diagnosis lies in a carefully taken history. And so far as the gastric analysis, stool analysis and other tests are concerned, I think that plays a very small part. The finding of blood in the stool, so-called, may come from so many different sources. And hyperacidity with

hyper or hypo-motility is not a diagnostic criterion of ulcer, as we all know. And the various special tests I don't believe bring us much closer to a diagnosis of the condition in many instances.

I regret I cannot place the great reliance that Dr. Aaron does upon the string test. I have used it frequently on cases that were outspoken ulcer. In many cases I tried to check up to see if it bore out some of the things that we found and time and again in outspoken ulcer as proven by history the Roentgenogram and the ordinary test, I failed to get the positive findings I expected to get with the string. True, it is confirmatory when it is found. Its absence, in the presence of other signs, I think is of very doubtful value.

I believe that the Roentgenogram is a very important thing. I would say, and I think we ought to make it more specific in saying, that fluoroscopy is the important thing. The presence of deformity in the duodenal form are among the telltale things of ulcer. In the absence of gastric findings—I think the Roentgenographers will bear us out—the study of the stomach by fluoroscopy and by a series of plates is an indirect method of diagnosis. With its positive findings, it is confirmatory of a careful history. The careful ruling out of other abdominal diseases, appendix, gall bladder, gastric neuroses, when they exist, reflex pelvic conditions and so forth—can be readily ruled out by a carefully taken history of the patient. I believe that Dr. Jackson's paper is a timely one because too many diagnoses are made of chronic appendicitis at this time and appendices are removed where really small duodenal or pyloric ulcer exists. Though the patient gets a great deal of relief from the removal of a slightly irritated appendix or from the reflex symptoms, the probability is he gets as much relief from the rest in bed after the operation—anywhere from six weeks to six months. Afterwards gastric symptoms again come to the front and definite signs of ulcer are present.

LIEUT. COL. PRESTON M. HICKEY, Detroit: I am very sorry I came in so late. I was privileged to hear only part of Dr. Jackson's paper.

The Roentgen ray, when it gives positive evidence, is most valuable. In the absence of positive findings, that is, if we have a duodenal ulcer which gives us a positive, definite record on the fluoroscope and with the plate, you then have something which is more positive, we think, than history or anything else. But, in the absence of direct signs, of course the physician has to take the evidence which is furnished him by the Roentologist of indirect signs with the evidence which is furnished by the other methods. In other words, if the Roentologist cannot furnish positive evidence, the evidence which he does furnish should be taken then in conjunction with the other findings of the history and other methods of diagnosis.

I would like to ask Dr. Aaron his precise measurements of the string, how he would correlate those measurements with the fact that you have so many different types of stomach. If you have an ulcer of the lesser curvature of one of these stomachs, the so-called fish hook type of stomach how could you measure that for the location of a duodenal ulcer by the string test? While the presence of blood upon

the string would be certainly suggestive, I cannot see how the measurements the doctor gave would give you any conclusive evidence of the ulcer unless you first go to the patient and see exactly how long his stomach is. He might have a transverse type of stomach. Of course, the presence of blood upon the string would be evidence of the ulcer as to its location but I would be somewhat skeptical.

DR. C. D. AARON, Detroit: It matters not whether you have a dilated stomach or not. During the night, when the patient is in bed, this string remains in the body all night and by morning the bead is in the duodenum. The ulcer would show itself, if there were an ulcer, at the small curvature. That is to say, it has been found by taking a certain number of cases that if the stain is found at a certain distance from the incisor teeth, it would be in the body of the stomach. It may be possible that an ulcer might be at the greater curvature and may not show on the string at all. I did not mean to imply that every gastric ulcer case shows a discoloration on the string, but it does in the majority of the cases and is of great help to us in the diagnosis—any more than the X-ray many times will not show an ulcer and yet an ulcer will be there. But if we do find it, it is suggestive.

DR. A. W. CRANE, Kalamazoo: Dr. Jackson has given a very frank and valuable analysis of these cases which have been discussed.

The case history as the doctor has stated seems to us a matter of primary importance, but what Dr. Aaron has said about the quiescent ulcer is certainly also true. We have been compelled to accept operating findings from various surgeons and have accepted them at their face value.

To check up careful diagnostic findings against surgical investigation is not always fair to the internist. Then in regard to the positive and negative findings in ulcer, we may say that the X-ray findings of the absence of ulcer may be of a positive character.

If, on the examination of a stomach, we see a good peristaltic wave passing from fundus to pylorus we are able to exclude ulcer of the stomach over the area where the peristaltic wave has passed. I think a perfect peristaltic wave never passes over a gastric ulcer. That may be considered positive evidence of the absence of ulcer, not as a negative finding.

An ulcer of the duodenum, where there is no scar tissue or induration, may give a deformity as the result of contraction. It may be a spasmodic hour-glass type of contraction, or an incisura which will be very persistent indeed, and yet there may be no scar tissue to cause deformity.

DR. JOHN B. JACKSON, Kalamazoo: We have not made use of the string test. As stated in our paper these cases were not in a hospital for observation. For this reason no routine examination of the feces for occult blood was made. In order to have such tests of value, the diet should be controlled for several days. In some of these cases occult blood was demonstrated, but on account of this lack of control of the diet preceding the examination, the results of these tests for occult blood were not included in our analysis of these cases.

## THE SIGNIFICANCE OF FOCAL INFECTIONS.\*

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It has long been recognized that the full significance of focal infections is not confined to their place of origin or location, but is to be found to a far greater extent in the widespread metastases which may be located at great distances and apparently have no connection whatever with the original focus. The very fact that the accepted synonym for focal is "circumscribed" or "confined" infection illustrates the fallacy under which old-time investigators labored; instead of being the end, the focus is too often only the beginning of the infectious process, which spreads to those tissues of the body which have an elective affinity for the invading microorganism or related strains. Since Rosenow has succeeded in establishing the transmutability of streptococci into pneumococci, it can be easily understood that the vista of possibilities in regard to infectious metastases has only just been opened.

Susceptibility to infection is determined not only by the condition of the individual exposed, but also by his habits, diet, occupation, age, environment, climate, and even sex, or by trauma. If the infection is complicated by a secondary infection, the latter may be unrecognized in the original focus, but will assert itself in the selection of metastatic foci in the distant parts of the body which have a selective affinity for one or another of the species of microorganisms involved.

Metastasis of this kind is dependent upon mutation in bacterial pathogenicity of the strepto-pneumococcus group. Once the danger of metastatic development is properly recognized, the systemic disease will prove to be preventable, or amenable to proper treatment when brought to the notice of the physician. In other words, progressive ill-health from apparently unexplainable causes may be prevented or cured by the removal of chronic foci anywhere in the body, and the full attention and energy of the physician should be directed to their discovery. A systemic infection from unrecognized, unsuspected or unremoved chronic foci may continue for years, gradually poisoning the system. Even if one infected focus has been discovered and removed, and the systemic disease does not clear up, it does not follow

that the theory is wrong, but merely proves that there is yet another focus of infection which will have to be searched for and removed to ensure success.

Among the leaders in this class of investigations may be mentioned Rosenow, Billings and their co-workers who have carried on during the last few years countless cultures and blood studies in animal and man, as well as functional tests. The knowledge thus obtained in regard to the principles underlying the location and nature of the infectious organisms constituting the focus, the method of systemic infection and the resulting morbid anatomy, has served to explain the nature and origin of pathologic conditions hitherto obscure or misunderstood, at the same time pointing out the way to their treatment and cure on rational lines—the extirpation of the offending, previously unsuspected focus of infection.

Any part of the body may harbor a focal infection, and the recognition of these infections being responsible for many diseases which the profession has not been able to deal with satisfactorily on the principles of symptomatology, has gone far toward arresting professional attention and directing it on the right path in its search for etiologic factors. Such centers of focal infection are found in cholecystitis, appendicitis, submucous abscesses, salpingitis, vesiculitis seminalis, and prostatitis; but the one site to which the vast majority of all investigation has so far been directed as the principal offender is in the head, in and about the tonsils, the teeth, and the accessory sinuses.

It is with this form of focal infection that this paper is chiefly concerned.

In the foreground stands the much debated question of the usefulness or otherwise of the physiologic tonsil itself. If it is once accepted as a fundamental truth that tonsillitis is responsible for a large variety of systemic diseases by reason of its pathogenic germs being spread through the blood and lymph streams, it would seem logical to remove all healthy tonsils before they have an opportunity to become diseased, provided the healthy tonsil serves no useful physiologic function. But even those authors who deny the necessity or physiologic advantage of the tonsil and, for example, cite as a proof of that assertion the fact that nursing infants suffer no discomfort whatever as a result of tonsillectomy, have not ventured so far as to suggest so radical a procedure. As long as the physiology of the tonsil is not fully known, it cannot be definitely stated what effect its

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removal would have in a given case. That the uses of these lymphoid structures are still little understood does not entitle us to look upon every prominent tonsil as a defect. Laryngologists agree that large tonsils, standing out prominently in the throat, are generally harmless, because their crypts are usually patent and the drainage ample. Against this must, of course, be counted the disadvantage of their offering a larger area for infection and occasionally interfering with the functions of the throat.

However, the view seems to be more and more generally accepted that the medical profession is only interested in the pathologic tonsil and that the normal tonsil should not be removed. In Johns Hopkins Hospital tonsils and adenoids in children are regarded as physiologically important parts which protect the lower air passages from dust and organisms, and not until they give rise to pathologic conditions is their removal recommended.

Surgical removal is given the preference over local treatment by the great majority of the profession. The local application of iodine and other escharotics has the disadvantage of injuring the mucous membrane of the mouth and gums, with the consequence that the bacteria which are ever present in this region in untold numbers will be absorbed into the blood by way of the lesion. Cleansing the tonsils with alcohol and subsequently rubbing them with finely powdered acetylsalicylic acid seems to have given good results in the hands of Albert Bardes, who claims that this treatment relieves the soreness and arrests bacterial growth. All other local applications, admittedly, do not influence tonsillitis to any appreciable extent.

On the other hand, Rosenow tells us that in his experimental efforts to obtain bacteria for cultures from the depth of the tonsillar focus by expressing the infected material with a laryngeal mirror, it commonly happened that abscesses were ruptured even in tonsils which appeared quite normal on the surface. It is evident, therefore, that local treatment, while it may relieve soreness and improve surface conditions, will not reach the depth of the focus and is therefore useless so far as its extirpation as the seat of metastatic systemic disease is concerned.

The indications for removal of the tonsil, however, depend somewhat upon the malady and the general condition of the patient; but this consideration affects only individual cases and not the broad principle which is here under discussion.

Now we have it on the authority of all the authors who have concerned themselves with the investigation of this question, that the acutely inflamed tonsil, where the crypts are full of dead cells, blood and dust particles, and countless bacteria, may be the focus from which may arise otitis media, sinusitis, mastoiditis, bronchitis, pneumonia, gastric and duodenal ulcer, endocarditis, myocarditis, pericarditis, cholecystitis, iridocyclitis, arthritis (commonly called rheumatism), rheumatic fever, and perhaps other diseases. The chronically inflamed tonsil with pouting crypts may, besides, lead to nephritis and interstitial hepatitis.

To substantiate this array of accusations, which may even be susceptible of further increase, the aid of the modern research laboratory under the guidance of careful and experienced investigators has been required.

About five years ago (1914) Connellan and King isolated from the tonsillar pathologic secretions a gram-negative non-pusforming diplococcus, which has been given the name of its discoverers. This same bacillus has been found in the mouths of patients suffering from arthritis, asthma, endocarditis, myocarditis and nephritis, and the inference that it is the cause of these affections in the cases where it is present seems to have been substantiated by the favorable effect of treatment with an autogenous vaccine made from the pathogenic secretion, followed by removal of the tonsils. The idea of clearing up the infection with autogenous vaccine before operating is prompted by a consideration of the danger of general sepsis following tonsillectomy. King reports that this treatment has been eminently satisfactory in a high percentage of the cases treated. He has found that in the presence of the Connellan-King bacillus the blood changes seem to be those of simple anemia, while in a few cases he has found a slight increase of eosinophiles—four to six per cent. In some of his cases symptoms disappeared for which the inoculation had not been intentionally instituted. Thus, in one patient with arthritis and marked ethmoiditis the culture was obtained from the throat with the object of influencing the arthritis; but after two weeks' treatment the arthritis was only slightly improved, while the ethmoiditis and pus in the nose had entirely disappeared. This shows the affinity of the particular bacterial strain for particular organs or tissues of the body; and on this subject of elective affinity, which is Rosenow's special domain, more will be said presently.

The variations in the strepto-pneumococcus and other groups, while first discovered in cultures grown in the laboratory, are apparently also present in focal infections, the tissues serving as a culture medium. Blood supply, oxygen tension, and unknown biochemic or other factors modify or entirely change their characteristics; this is one explanation of the development of arthritis as a consequence of tonsillitis, of endocarditis from the presence of the streptococci viridans or hemolyticus in alveolar abscesses, and of similar affections on the same principle.

The streptococcus viridans or hemolyticus to which reference has just been made, has a special pathogenicity for malignant endocarditis, with a predilection for old valvular scars and the endocardium, where it causes the development of enormous vegetations and thrombus formations. The only hope for the patient in these cases is complete eradication of the original focal infection whence the germ is carried into the circulation. Myositis, arthritis, and other chronic diseases are instances in which the same microorganism exerts its baneful influence in milder degrees.

At this juncture it may be well to look into the question of bacterial affinity for different tissues of the body. Up to the present the greater part of our knowledge has been derived from experiments on animals, carried on by Billings, Rosenow, and others. From these investigations it seems an established fact that the streptococcus group is possessed of a pathologic specificity for certain tissues when injected into rabbits or other animals. Thus, arthritis was produced in animals which had been inoculated with cultures made from patients with hemorrhagic nephritis; and pancarditis and acute arthritis were the results of inoculation with cultures from patients who had rheumatic fever, endocarditis, and pericarditis.

The specificity of the strepto-pneumococcus group was beyond the pale of understanding prior to the remarkable achievements of Rosenow, who proved the transmutability of these organisms. An important factor in this transmutation seems to consist in the oxygen supply of the tissues, so that characteristics may develop which render the organism pathogenically specific in the myocardium, endocardium, pericardium, gallbladder, pancreas, kidney, mucous membranes of the stomach and intestine, tendons and aponeuroses. Rosenow's method of growing new cultures from microorganisms taken from the original focus has made it pos-

sible to connect the latter with the affections enumerated above, as well as affections of the joint tissues and muscles which have previously been clinically obscure.

The results reached by the research workers in this field do not always agree, but this is explained by differences in the transmutation of the strains, with consequent differences in their pathogenic characteristics.

The strain of streptococcus which produces rheumatic fever has been found to have an affinity for the endocardium and pericardium, often for the myocardium and some groups of the skeletal muscles. There is no doubt that other affinities will be discovered in due time, and it is probably no mere coincidence that patients with thyroiditis have been found suffering with acute rheumatic fever. Billings is convinced that focal infection is the chief etiologic factor in acute rheumatism, chronic deforming arthritis, gonorrheal arthritis, malignant endocarditis, myositis, myocarditis, septicemia of various bacterial types, tuberculosis, nephritis and visceral degeneration, certain infectious types of thyroiditis with or without hyperthyroidism, acute and chronic pancreatitis with or without resulting glycosuria, gastric and duodenal ulcer, and cholecystitis.

The similarity of the pathogenic organisms in the original focus and in the remote infected tissues may be regarded as proving the etiologic relation between the two, for many bacteria retain for a long time the peculiar properties which determine their characteristic localization. The idea readily suggests itself that other diseases, whose etiology is still obscure, may have a similar origin, and there is consequently a wide field open for further research work, experimentation and discovery.

Osborne believes that brain and nerve disturbances as well as neuritis may occur from mouth infections, and that it is quite possible that the continued absorption of concealed irritants in the mouth for months and years may cause arteriosclerosis. He is certainly strongly of the opinion that all kinds of gastrointestinal disturbances, such as hyperacidity, ulcer of the stomach and chronic colitis may be caused by mouth infections and pyorrhea. It is now well known that chronic sinusitis may exist for years and finally be an important factor in the development of systemic disease.

King holds it to be an accepted fact that most patients with septic arthritis or conditions that were formerly classified as rheumatism have a focus of infection somewhere else in

the body. This may be found in the tonsils, ears, accessory sinuses, gastrointestinal tract, or in and around the teeth, but the most frequent focus is in the mouth or the tonsils. That rheumatic fever is a true septicemia is shown by the symptoms of chills, febrile remission sweats, anemia, leukocytosis, and a partiality for serous surfaces, which coincides with symptoms observed in septic intoxications; and the assertion of older writers that there was no relation between rheumatic fever and chronic rheumatism is refuted by the new evidence. Outbreaks of latent rheumatism are probably due to the absorption, under favorable conditions, of infectious material which has been retained in the tonsils. The respiratory and circulatory diseases of infancy are now held to be of rheumatic origin, and this belief gains ground from a consideration of the fact that all these ailments start with tonsillitis, which sets free the germs of rheumatism.

Thigpen reports that it is a frequent experience with him to find a chronic focus of infection within the tonsils in cases of chronic joint affections, the latter disappearing with the removal of the focus. He further finds that such chronic foci lead to chronic cardiovascular changes, thyroid disturbances, chronic kidney changes, gallbladder infections, appendicitis, phlebitis, neuritis, and other affections.

Cholecystitis, which is often associated with cholelithiasis, is a focal infection that produces systemic disease, and, according to Bryan, it shows its pernicious effect on the myocardium particularly. He found that after the removal of stones or of the entire gallbladder, where indicated, the myocardial changes improved, provided no destructive changes had already been wrought.

If this be considered in conjunction with the reflections of Billings, who believes that cholecystitis, while admittedly a focal infection, is itself due to infection from tonsillar microorganisms, it will at once be seen how the chain of evidence is gradually strengthened, pointing to the pathologic tonsil as the worst offender, responsible for disturbances in the most unexpected quarters.

Hyperplasia of the cervical lymph glands near the angles of the jaws will rarely subside after treatment of carious teeth and alveolar abscesses alone, while tonsillectomy in addition to this treatment, will immediately clear up the condition. This clearly proves the presence of a pyogenic infection for which the tonsillar infection is in most cases responsible.

Goiter is one of those human ills, the successful treatment of which has baffled the wisdom of generations, probably for the reason that the question of its etiology is not yet solved. The fact that no goiter treatment is successful in all cases, and none of them in some, conclusively proves that goiter is due to a number of different factors, all of which have not yet been discovered, and it now appears that focal infection is one of these factors. Billings has found that in certain infectious types of goiter the rapid subsidence after removal of the tonsils by extirpation, and of the infectious foci in the jaws by autogenous vaccine treatment, was explained by the presence of streptococci in the tissues and alveolar pus.

Similarly, Osborne writes: "Teeth and tonsils are frequent causes of thyroid disturbance, causing both hyper and hypo-secretion, and no medicinal treatment will effect a cure until the foci of infection have been removed. The thyroid may be considerably enlarged and yet give no symptom of increased secretion and need not be cystic. This is shown by the surgical removal of the mouth infection."

There can be no question that the constant absorption of irritants or poisons from the mouth may cause renal irritation and chronic nephritis, even if focal infection of the kidney is not thus caused. Many a case of autogenous or purulent infection of the kidney occurs without any apparent explanation, and some authors hold that these obscure cases are mostly due to infections of the mouth, tonsils, or sinuses adjacent to the nose. In the early stages of glomerulonephritis, tonsillectomy may be worthy of consideration.

Osborne raises the question whether pyorrhea may not be the cause of chronic colitis or at least of decomposition in the colon, as both these conditions occur most frequently after forty years of age. This theory, of course, at once raises the entire question of intestinal stasis, its origin and its effect on distant parts of the body, as not only Lane but also those investigators who refuse to hold intestinal kinks and bands responsible for intestinal stasis regard the latter as the prime causative factor in just such affections as tonsillitis and a host of others.

As to pyorrhea, Schamberg denounces the practice of removing one infected tooth and leaving others in the mouth. The mouth should be kept free from infection at all costs, even though it should mean the removal of every tooth in the head, and he prefers a toothless

mouth to one containing a single focus that menaces the health of the patient. Frequent roentgenograms should be taken, not only to discover every suspicious root, but also to inspect from time to time all crown and bridge work, in order to discover any disease in the hidden parts. In this connection the modern practice of dentistry comes in for severe condemnation at the hands of Osborne, who believes that there is no greater menace to health than crowned and bridged teeth, to say nothing of imperfectly filled and dead teeth, inasmuch as the hidden bacteria are preserved thereby and are ever ready for mischief. He also insists that no dentist should devitalize a tooth, or attempt to fill the roots of a devitalized tooth which is to be preserved, without the aid of roentgenograms. The same aid should be invoked for the purpose of recognizing chronic alveolar abscesses, which often exist unknown to the patient, and film roentgenograms of the jaws are often the only means of such recognition.

In cases where there are multiple foci, such as are found around the teeth, too much manipulation at one sitting is likely to stir up infection and cause abrasions which may serve as portals of entry for the various organisms which are ever ready to invade a buccal lesion.

The extreme care necessary in searching for foci about the teeth is exemplified by one of Rosenow's cases of dental neuritis and myositis, in which the focus was found in the pulp of a dead molar, while no demonstrable lesions were found in the jaw. The removal of the tooth, while helpful, was not followed by the prompt disappearance of the symptoms. Streptococci, demonstrated in sections of muscle excised from the neck, were alive ten days after a typical attack of spasm and pain.

As to tuberculosis, Lermoyez regards chronic lesions of the tonsils as an open door for the entrance of the tubercle bacilli.

In the treatment of affections of the nervous system a search for foci of infection should always be instituted, as their possible influence cannot be overestimated.

In regard to contraindications to tonsillectomy and conditions which render such intervention undesirable, the *Journal of American Medical Association* summarizes the tentative conclusions reached by Crowe and his associates in the Johns Hopkins Hospital as follows: The operation should never be undertaken during the acute stage of tonsillar inflammation, as a cerebral abscess may result. Diabetes is as

much a contraindication as it may be for any operation necessitating general anesthesia. Tonsillectomy is rarely of benefit in the chronic deforming types of arthritis, in many cases doing probably more harm than good. The Baltimore surgeons are further convinced that nothing is to be gained from a tonsillectomy during the acute stage of chorea, acute rheumatic fever, or endocarditis. Their experience shows that even after the nose and throat have been put in normal condition by operative measures these diseases may recur. In any event, the tonsils are not the only portals of entry for the etiologic organisms, and their removal in an interval free from symptoms can be justified only on the plea of preventing further cardiac lesions which may result from acute tonsillitis. The frequency of heart and joint defects in chorea may justify such a prophylactic measure.

However, it is a generally acknowledged principle which brooks no contradiction that the cause of a disease must be eradicated or overcome in order that a cure may be effected; and the study and removal of focal infections as causes of systemic diseases deserve the most serious attention of the profession. The Baltimore injunctions merely emphasize the fact that the treatment must be individual and managed according to indications. This also refers to the character and localization of the focal infection. While in most cases the pathogenic factors will certainly be found in the pathologic tonsil or teeth, a careful search for other foci in any other part of the body cannot be dispensed with, and in this connection special attention should be paid to the sinuses adjacent to the nose. In this region infection may exist for years in a latent stage, and is liable at any time to become active and cause trouble, so that it is absolutely necessary to remove any infection, latent or active, that may be found there. This is in accord with the accepted modern principle of preventive treatment. To allow slumbering infectious foci to persist is tantamount to inviting chronic invalidism, even should no more serious well defined diseases result. Indeed, it is often found that patients whose strength and vitality are reduced from long illness suffer from alveolar or other local infections, the persistence of which will prove an obstacle to their full recuperation.

The treatment, therefore, should not be confined to the eradication of evident foci—because, as Rosenow points out, similar conditions may be present in inaccessible foci and in others

too small to be detected offhand. A small metastatic lesion may continue the process independently of the original source, and it should be clearly understood that the removal of the infected area in the mouth does not remove the microorganisms localized in distant parts of the body. Inflammation in distant parts will not be abated, nor disintegrated tissue restored by extirpating a tonsil, but the latter process will prevent a fresh supply of toxic material being furnished and thus render the infected distant parts amenable to indicated treatment. No treatment of these conditions will be effective unless the focus in the mouth, or wherever it may be located, is destroyed. But, as the Baltimore investigators put it, tonsillectomy will not cure tuberculous cervical adenitis, arthritis, or glomerulonephritis. Systemic diseases have to be treated as such, after the focus of infection has been destroyed; but unless it is destroyed, any part of the body which has been clinically treated is liable to reinfection by the germs which have an affinity for those tissues as long as these germs are allowed to grow and multiply and spread from the original focus.

In cases where major lesions are widely distributed or long continued, the history of throat or mouth lesions is less often obtained than when the trouble is obviously active in the latter region, but it is so much more important to obtain the history of old or subjectively unimportant throat troubles, as these conditions often antedate the major systemic affections by very considerable periods. Likewise secondary foci in lymph nodes in the vicinity of the primary foci and of infected distant parts may increase the virulence of the general infection by adding more fuel to the flames.

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#### DISCUSSION.

Dr. E. W. HAASS, Detroit: I don't know of any subject in medicine of quite so much importance at the present time as the question of focal infection. I don't know of anything that has stirred up so much bitterness. Only this noon I stopped in to have a bite of lunch and I met a specialist of Detroit. I told him about this paper. He said, "I am awfully glad. It is a very important question. Only a year or two ago it raised hell with my practice; but they have come back, all without their teeth, their tonsils and appendix, they are all back to me just the same. I don't know of a single patient benefited by any of the work done on them by the removal of focal infection."

I know he is one of the busy men in the city of Detroit. However, he is not here to listen to the paper or listen to the discussion. He went back to his office to make more money.

What is the truth? In this subject, you have to be sure of two things, a systemic condition that can be caused by focal infection, some of the things the doctor mentioned in his paper. The second thing you have got to know or prove—you have a very definite focus in the body. Let us get some examples of this.

For example, we may have an endocarditis or cardiac lesion supposed to have been caused by some infection that has entered from the tonsils. We may even be able to demonstrate there is in that individual a diseased tonsil. We advise the patient that if they have the tonsils removed the endocarditis will disappear; or if it has already disappeared, we will say that the avenue of entrance is gotten rid of and the patient will be all right. Is that so? Every clinician will tell you they have had patients suffer a year or two. I know myself in patients I have observed they have suffered from endocarditis, very definite conditions long after the tonsils have been removed, and in a year or two or year has gone on with new destruction of the valves. In order to learn anything from this, we must know the following—that an infection can enter the system through some portal and then whether we remove the portal or not, it may still be able to transplant itself in some other place. If the organism is already in the valves, it may transplant itself just the same as it did from the appendix. It is an entirely different condition. If we have a toxic condition, which is the result of absorption from some focus of infection, that is a different condition entirely. As a result, we can have very definite inflammatory conditions in the eye, of which we have all had demonstrations; and we can have pathologic conditions growing out of the circulatory apparatus in the kidneys. If we could say that we had a certain change, that must come from a certain condition. For example, if we had a neuritis we could say such a condition must come from focal infection in the teeth; if we had a kidney condition such must come from the tonsils, we could get somewhere. But such a scheme is absolutely impossible to develop.

It has been shown by Dr. Morse of Harper Hospital, there is a close affinity between the skin and the kidneys. Patients who come in with extensive burns and who die always show a very extensive involvement of the kidneys. That seems to be very definite. We can't say that if a person has a definite kidney condition, it must come from a skin infection. What can we say about such a kidney? It has been my practice if a patient comes to me complaining, and examination shows the patient has albuminuria and very often has no injury at all, that patient can be said not to be suffering from nephritis but from absorption from some focus. Those are the patients from whom we can hope to gain something by discovery and removal of the focus. If we find such a condition, we have justification for looking for a focus. That focus may be in the upper respiratory tract. Removal of it will promise the patient something.

Taking up the question of the teeth. Probably one of the most important subjects, because abused so often. What can the teeth be said to be responsible for? In the first place, if the patient

suffers from the fact that dentistry has been, you might say, too good—the dentist has been too sparing of the patient's feelings—the modern dentist will tell you that any work that is done on the teeth preliminary to removal of pain or killing the nerves is always a destructive process. Every one of those conditions has hurt the patient so far as the creation of an active infection. You cannot have dental work done with the destruction of the nerve and save pain, if you want to be sure you don't have a focal infection.

That has been the practice of dentistry up to a few years ago, and is present at the present time. You see how many potential mouths there are. A patient will tell you, "I have never had any trouble with my teeth, never had a tooth abscess." It is not the patients that have a thing easily expressed that have any difficulty. I don't take any stock in the subject of pyorrhea as the cause of nephritis. It is only conditions where it is locked in, where you have this condition under pressure. Those you cannot tell by your ordinary methods of examination. In other words, there is no justification for our saying the teeth are the cause of any trouble from the fact that we can express a lot of pus from the side. If the pus can be expressed, there isn't any focus. It must be made by an expert, and that expert must do it almost always by means of Roentgen examination plus some other method such as electrical conductivity test and so forth. Of all these examinations, the Roentgen is the most important. That is not always infallible. It depends on the interpreter, the man who is able to interpret plates.

For example, I had a case referred to me about six months ago suffering from neuritis after confinement and the obstetrician wanted to know if the patient was suffering from sciatica on account of injury. My diagnosis was she was suffering from toxic neuritis. There wasn't any other condition that would account for it, either in the blood, spinal fluid, or any other examination that could be made. In looking over the patient, nothing could be found at all that would cause the trouble except possibly her teeth. She had been to a dentist and they found she was suffering from an apical abscess and the tooth was removed but her condition was becoming entirely unendurable.

The result was the patient desired to be examined in another town. So I referred her to Dr. Patrick of Chicago. He made the same examination. He demanded that her teeth be X-rayed again. They found she had two more apical abscesses. The removal of those two teeth cleared up her condition immediately. My error was I accepted the results of one person's examination, which puts us in a very precarious condition.

We must know who does our referred work or we will make such mistakes. I have known patients to be reported negative at some good clinics who have been re-examined in other places and have had

eight or more teeth that were definite harborers of infection. That is a condition hard to obviate sometimes. That is why this subject got in disrepute. We must know we have a very definite condition in the body and we must know we have a focal infection. If you have a patient suffering from neuritis due to tabes, the pulling of any number of teeth won't relieve the condition. The error starts with the faulty diagnosis in the first place. The patient can't hope to get any benefit and the whole question goes into disrepute.

Neuritis is frequently the result of absorption from the teeth, and the teeth there have more to do with the cause of the neuritis.

The next most important sources of infection are the sinuses. The tonsils, the teeth and the sinuses are more important than anything in the abdominal body as causative factors.

As far as the appendix is concerned—the appendix, gall bladder and so forth, I think that the conditions traceable to the gall bladder for example are not caused by infection in the gall bladder itself but are caused by the condition that caused the gall bladder disturbance. The same thing for the appendix. We know how often, after periods of infection like we had this winter, how many cases of appendicitis we have. Any number of cases of appendicitis are brought to the clinic after this last epidemic of influenza. Of course, it was a sad result, because the infection was almost overwhelming as it was. Any arthritic condition would not be the result of the infection of the appendix, but rather the thing that caused the inflammation of the appendix. So that I think now we have been ascribing entirely too much weight to the conditions in the abdomen as being per se the causative factor in focal infection.

THE CHAIRMAN: Dr. Rich will continue the discussion.

DR. HERBERT M. RICH, Detroit: As I am to discuss this same subject in a way in my paper tomorrow afternoon before this section I don't propose to steal my own thunder by talking about pulmonary tuberculosis.

I would like to make a few remarks about two common complaints of the diseases of the chest which are due to focal infection. In the first place, one of the common complaints is pain in the chest, of rather a definite character, not always in the same place, a pain severe enough to bring the patient to the doctor. Examination of the chest reveals nothing. There is no pleurisy. There is no fever. No signs of disease of the lungs. In other words, the condition is evidently a myalgia. By occlusion we arrive at such a conclusion. Now this myalgia is, in my experience, usually due to apical abscess, and pulling the tooth will go a long ways towards clearing up this myalgic pain in the chest.

There are two things I keep in my mind when I send the patient to have the tooth pulled; if you find there is an apical abscess. In the first place, I

tell him he will probably be worse. They usually are for a time. I tell them, "If you have a fire in a barn, putting out the fire does not replace the barn. At the same time, you will find it important to put out the fire." So we pull the tooth, to put out the fire. That is a homely illustration. I tell them they should not expect to be well after they have the tooth pulled. They come back for further treatment. The tooth having been pulled you have some chance of success in your treatment of myalgia.

The second disorder is frequently asthma. Since Walsh in 1910 gave attention to the symptoms, we have made more progress in the therapeutics and there are very few cases of bronchial asthma now which we cannot at least relieve. While it seems impossible to cure them all perhaps, we can give them relief of a more or less permanent character. Now these patients present a remarkable variety of etiology.

They all exhibit the phenomenon of sensitization or antiphylaxis. In many cases they also exhibit focal infections. Why the new born infant should be sensitized to the egg albumin is a fact I never heard explained nor any attempt made to explain. But it is not very difficult to imagine the reason why a person with pus in his ethmoid cells might not become sensitized. In fact, it is useless to desensitize and leave those ethmoid cells closed in. Bronchial asthma due to such focal infection is never cured until the focal infection is treated. Although you may relieve these patients by temporary desensitization, these forms of asthma due to foods and to bacterial infections fall largely under the same category.

I may only say in closing that I believe it is a mistake to tell patients they will be cured by the removal of the focus of infection because, in my experience, they rarely are. What we do is to give ourselves a chance for successful treatment after the focus is removed. The patient should thoroughly understand that before they have a resection.

THE CHAIRMAN: I think it would be well to hear from a certain man. I would like to call on Dr. A. W. Crane, from Kalamazoo, to continue the general discussion.

DR. A. W. CRANE, Kalamazoo: A paper on this subject is always timely. Ingersoll said once that a question was always as fresh as a daisy until it was settled. It is evident that the question of focal infection is not wholly settled. I confess that I am entirely in accord with Dr. Aaron in his discussion of the subject.

The frequency with which a focal infection about the teeth is associated with some internal disorder and the good result which so often follows the removal of the infection forces belief in the substantial accuracy of that position. I think it has already been fully discussed that the removal of the infection does not always cure the disease, but

of course that does not disturb the accuracy of the general proposition.

Now, in regard to the teeth, there is one point that has not been brought out fully that explains to some extent why a small infection about a tooth is more important than an infection, say, in the gall bladder or appendix or an abscess elsewhere in the body, where the quantity of infectious material is greater than that around a tooth; and that is because it is next to a solid bony process which prevents the carrying off of the infection, and which furnishes an ideal absorptive surface for the infection. There is in some cases a walling off process finally accomplished. That will be seen frequently on the X-ray film. There is a dense area of the bone sometimes about a tooth, and the tooth may be imbedded in it so that when it is withdrawn, that hardened bony part of the alveolar process will be brought away with the tooth. In the X-ray film the tip of the tooth will be seen to be imbedded in this hard bony process.

We may say that here is the final end of the focal infection as it has been actually carried on by the natural processes. The idea that pus under pressure is a necessary condition of absorption is certainly not true. In the apical abscesses at the roots of teeth, shown by X-ray films, there is really not an abscess but a little bunch of granulation tissue bathed in pus. The pus is not under tension. It will ooze out from the edge of a tooth. There is constantly going on an absorption into the alveolar process that is not walled off and the effort on the part of nature to fill that in with granulation tissue is, in most cases, entirely ineffective.

The subject is almost inexhaustible and has opened up so many avenues of inquiry, such as antiphylaxis and the question of tissue affinity, that I presume many more papers will be presented in the future before this association.

THE CHAIRMAN: Dr. West of Kalamazoo is not here. We have a few minutes left. Dr. Begle, have you anything to say along this line?

DR. HOWARD BEGLE, Detroit: I did not intend to discuss this paper. I am very much interested in this subject in connection with eye conditions. I feel that it is extremely important for a man dealing with eye diseases to carefully examine the teeth, especially this one condition of iritis.

Of course the large majority of cases of iritis—I would not say the majority, but perhaps forty per cent.—of iritis cases are due to syphilis. So my very first examination is an examination for syphilis combined with laboratory tests.

I think the second important cause is from apical abscesses at the roots of teeth. In my experience, especially the teeth with crowns are the ones which are apt to be at fault. In talking with a dentist not long ago, he made the remark that crowns which were put in a few years ago, ten years ago,

were invariably put in improperly. And it is certainly surprising how many of the crowns are in poor condition. Of course our main test there is the X-ray; but personally, I don't believe that we should depend upon that too much. If we have excluded every other cause and there are crowns, it is entirely possible and I believe right that the crown or perhaps the tooth should be removed, especially if it is a tooth not extremely valuable to the patient. I have such teeth removed and in those cases it is often a cure of the condition. It is a cure of the condition, and the function of the eye will be restored to normal.

Most of the cases of iritis which occur from the teeth are of the plastic type and not severe cases, cases in which the eye is red and somewhat painful, but they are cases marked by their pronicity rather than by a large amount of exudate being thrown out. The cases in which there is a lot of pus

thrown out from the eye are not due to the teeth.

I see more cases which last over a long period. Fortunately they do not do a great deal of damage to the function of the eye. After a case of iritis has run a month or two months or even longer, a few offending teeth are removed and the eye will clear up and you will get a perfect vision after.

I am inclined to believe there must be rather a strong connection between the teeth and the eye. In my experience, focal infections of the tonsils have rarely set up eye conditions. I don't deny they may be set up from that source. I am inclined to believe that the eye affected has relation with the teeth and that the teeth are actually on the same side of the jaw as the eye affected. That would seem to be perhaps only a natural conclusion. In my experience with cases that has been, I think to some extent, borne out.

#### NEW AND NON OFFICIAL REMEDIES.

*Atreol*.—An aqueous solution containing as its principal constituent the ammonium salts of a mixture of organic acids containing nitrogen in the sulphonic radical which results from the action of sulphuric acid on certain petroleum distillates. Atreol is applied locally for promoting the absorption of swellings and effusions in contusions following fractures, etc. It is claimed to be useful in dermatologic and gynecologic practice. It may be used in aqueous solutions, ointments and suppositories. The Atlantic Refining Co., Philadelphia, Pa. (*Jour. A.M.A.*, May 17, 1919, p. 1463).

*Gilliland's Concentrated and Refined Diphtheria Antitoxin*.—Marketed in ampules containing 1,000, 5,000 and 10,000 units each. For a description of Diphtheria Antitoxin, Concentrated, see New and Nonofficial Remedies, 1919, p. 280. Gilliland Laboratories, Ambler, Pa.

*Gilliland's Concentrated and Refined Tetanus Antitoxin*.—Marketed in ampules containing 1,500, 3,000 and 5,000 units each. For a description of Tetanus Antitoxin, Concentrated, see New and Nonofficial Remedies, 1919, p. 266. Gilliland Laboratories, Ambler, Pa.

*Gilliland's Antipneumococcus Serum, Type 1*.—Marketed in vials containing 100 Cc.; also in double ended vials containing 50 Cc. each, with a gravity injection apparatus for intravenous injection. For a description of Antipneumococcus Serum, see New and Nonofficial Remedies, 1919, p. 271. Gilliland Laboratories, Ambler, Pa.

*Gilliland's Small-Pox Vaccine*.—Marketed in sealed capillary tubes in packages containing two tubes each. For a description of Vaccine Virus, see New and Nonofficial Remedies, 1919, p. 274. Gilliland Laboratories, Ambler, Pa.

*Gilliland's Original Tuberculin, "O. T."*—Marketed in 3 Cc. vials. For a description of Old Tuberculin, see New and Nonofficial Remedies, 1919, p. 277. Gilliland Laboratories, Ambler, Pa. (*Jour. A.M.A.*, May 17, 1919, p. 1463).

*Barbital-Abbott Tablets, 5 grains*.—Each tablet contains 5 grains of barbital-Abbott (see New and Nonofficial Remedies, 1919, p. 82). The Abbott Laboratories, Chicago.

*Procaine Hypodermic Tablets, ¼ grain*.—Each tablet contains ¼ grain of procaine-Abbott (see New and Nonofficial Remedies, 1919, p. 30). The Abbott Laboratories, Chicago.

*Procaine-Adrenalin Hypodermic Tablets*.—Each tablet contains procaine-Abbott 1-3 grain and adrenalin 1-2500 grain (see New and Nonofficial Remedies, 1919, p. 30). The Abbott Laboratories, Chicago. (*Jour. A.M.A.*, May 17, 1919, p. 1463).

*Protargentum-Squibb*.—A compound a gelatin and silver containing approximately 8 per cent. of silver in organic combination. It has the actions and uses of silver preparations of the protargol type (see New and Nonofficial Remedies, 1919, p. 307). Protargentum-Squibb is used in 0.25 to 5 per cent. aqueous solutions, prepared freshly as required. E. R. Squibb and Sons, New York. (*Jour. A.M.A.*, May 24, 1919, p. 1543).

*Antimeningococcic Serum (Combined Type) (Gilliland)*.—Marketed in 15 Cc. and 30 Cc. ampules and in 15 Cc. and 30 Cc. cylinders with attachments for spinal administration. For a description of Antimeningococcic Serum, see New and Nonofficial Remedies, 1919, p. 270. Gilliland Laboratories, Ambler, Pa. (*Jour. A.M.A.*, May 24, 1919, p. 1615).

# The Journal

OF THE

## Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

A. L. Seeley, Chairman .....Mayville  
 E. W. Toles .....Lansing  
 R. S. Buckland .....Baraga

Editor and Business Manager  
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 On Leave of Absence on Duty  
 Medical Reserve Corps, U. S. A.  
 D. EMMETT WELSH, M.D.,  
 Secretary Editor, pro tem.

All communications relative to exchanges, books for review, manuscripts, news, advertising, and subscription are to be addressed to D. Emmett Welsh, M.D., 4th Floor Powers Theater Building, Grand Rapids, Mich.

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July

### Editorials

#### THE HOSPITAL SITUATION IN DETROIT.

Detroit is suffering from the lack of hospital accommodations. It is quite difficult for many of the reputable physicians to get their cases into a hospital. The Henry Ford Hospital at the present time houses Base Hospital No. 36 of the U. S. Army. Detroit has grown so rapidly in the last fifteen years that it has been unable recently to care properly for its sick or its visitors. Hotel Pontchartrain closes its doors next fall?

We are informed that the Board of Trustees of Harper Hospital have decided to make that Institution a closed hospital. As this hospital is always filled, it makes very little difference theoretically whether its patients are taken care of exclusively by its staff or not.

At a special meeting of the Wayne County Medical Society May 26, 1919, there was quite a general discussion on the Harper question.

Dr. Ballin stated Harper's position and Dr. Babcock gave a very fair statement as to the advantages and disadvantages of the open and closed hospital. The meeting was apparently in favor of the open hospital. Mr. Culver of the "Little Stick" who was present at this meeting closes a characteristic article of his with the following:

"If the scheme is allowed to go through, it is up to Detroit's Delegation in the Legislature to see that proper legislation is passed to remove Closed Hospitals from their privileges of tax exemption and it is up to the charitable people of Detroit to see that their contributions are given to institutions which serve all the people and not patients of the selfish clique of physicians and surgeons who are scheming to put this thing over."

Mr. Culver's criticism of the Staff is as far as known an assumed proposition.

However we feel in regard to the closing of Harper Hospital, we all know that Detroit needs more hospital beds and more hospital accommodations. It would seem a good time for the City of Detroit to build and run a modern City Hospital. We also feel that the staffs of the several hospitals should so utilize their beds that the more urgent hospital cases could be taken care of and that those cases which can properly be cared for outside, should be denied admission under present circumstances.

#### A WORD TO THE MEMBERS OF THE MICHIGAN STATE MEDICAL SOCIETY.

Few things in this world have escaped the disintegrating effects of the great world war and our society has not been one of them.

Absorption in war activities, the absence of many of our members in the service and the overworked condition of those left to carry on civilian practice, have tended to divert our attention from the scientific side of our profession and to make us cold to the social side.

By reason of this the report of our secretary showed at the Detroit meeting that on May 29, there were 797 of our members in arrears for

their subscription to the Journal and 2,026 were paid up. Since that date a few have paid but still the fact stands that over one-third of the members of our society in good standing in 1917 or 1918 are now delinquent. Some of the men unpaid are doubtless still in the service and their County Societies have not paid their dues for them as has been done by a considerable number.

Should these all pay on their return, there will still remain too large a number of unpaid subscriptions to the Journal, which is our standard for ready estimate of the condition of the state society and of the County Societies as well.

Unless the County Societies flourish the state organization is bound to languish and it is up to every former member to get off his coat, put on his jumpers, overhaul the carburetor, test the spark, blow up the tires and then crank his arm off to get his local society going. Get your men together, give them a good feed, pick out the livest wire among them as your secretary, or, better yet, program chairman, then invite some outsider to give you a paper on a subject you will want to listen to; post your men on the proposed subject and have them prepared to slash the paper to pieces.

Nothing adds to the zest of a meeting like a hot discussion that almost draws a blister.

Then hold your meetings oftener. Drop the knocker's hammer and pick up the booster's trumpet and blow for all you are worth, and we will make this reconstruction year the best one in the history of medicine in Michigan.

C. H. B.

#### AMERICAN COLLEGE OF SURGEONS.

##### NEWS-LETTER CONCERNING HOSPITAL STANDARDIZATION.

These pages are to express gratitude to the Fellows of the College for their good help in the hospital standardization of the College and to enlist on the part of the Fellows still further conscientious service for the betterment of the practice of medicine through that program. Further, two questions are here briefly answered: First, what is hospital standardization?

and, second, what has the College accomplished toward hospital standardization?

##### WHAT IS HOSPITAL STANDARDIZATION?

To define hospital standardization in a negative way, it is not an effort to make hospitals alike in form of government, of administration, or of equipment; it does not seek to enforce conformity to any given mold nor to limit originality in any phase of hospital work.

Hospital standardization means thinking alike on the part of doctors, hospital trustees, hospital superintendents, laboratory workers, nurses, and the public upon the aims and utility of hospitals. It means that every patient in a hospital is entitled to the most efficient care known to the medical profession; and that every hospital believes itself morally obligated either to render such service to its patients or to state frankly to the patients that it cannot do so.

The entire program of hospital standardization undertaken by the College is a gift to hospitals and to the medical profession. But in so far as any such program is one of reform, that program may or may not in a true sense be a gift. In what way, then, is the effort of the College a gift? This question is important. The answer to it lies in the method itself with which the College has taken up the work.

There are two methods by which hospital standardization may proceed. The first is scientific; the second, human. These methods are not entirely exclusive, one from the other, but the difference between them is, nevertheless, the difference between a gift of lasting worth as against an uninvited interference of doubtful value.

The scientific method is concerned with its own point of view. It is interested in the outcome of its actions on others. It assumes that men and institutions are to be governed and that, having determined upon a best form of government, there is no right of appeal by the governed. Under the scientific method hospital standardization would say to the hospitals: "I have analyzed correctly my own duty toward you and you must therefore accept all that I do to you. You may not like it. Here is a plan

for the betterment of hospital service. You must co-operate by accepting it. It will do you good."

The scientific method has wrecked many a worthy project of reform. It prejudices men against all systematic progress. It is a prevailing foolishness among us which keeps the millennium undated. It is a blunder which the College in its relations with hospitals and the medical profession resolutely determined not to make.

The human method never forgets the point of view of others. In fact, that is the only point of view which it knows. It assumes that men are intelligent and open-minded. But it is not sentimental or merely "sugar and spice and everything nice." It values straight thinking and accurate data quite as much as does the scientific method. Under the human method hospital standardization says to hospitals: "Here is a plan for the betterment of hospital service. It is a plan which grew out of our own heads and hearts after conscientious and long effort on the part of all of us to devise such a plan. Will you please consider whether or not you will accept it? Will you become a rival for the light under the terms of this plan?" This is the method with which the College took up hospital standardization.

That some concerted action for the betterment of the practice of medicine is needed, no one questions. The opportunity to be a part of such action faces each of us. Five years ago the field of hospital standardization, as a means to this end, was unoccupied. When the College entered the field at that time, it did so with exceeding care, for it had no precedent to guide it and it had also to provide itself with the necessary personnel, office machinery and financial support to carry the work.

#### WHAT HAS THE COLLEGE DONE?

At the beginning of the College in 1913 active work in hospital standardization was accepted by the College as the most practical means to advance the art and science of surgery, for if surgery is to be advanced, the conditions surrounding the practice of surgery must be correspondingly improved. The fol-

lowing paragraphs state briefly what has been done toward standardization of hospitals since that date.

In 1914, in connection with the necessary work of perfecting the organization of the College and of obtaining a sound financial basis, the College began to acquire first-hand information about hospital conditions in Canada and the United States. It conferred with doctors, hospital trustees, and hospital superintendents about the work; with medical societies and with hospital organizations, asking their help and co-operation in formulating a plan of action.

In October, 1916, at the annual meeting of the Fellows in Philadelphia, a report of these informal conferences was made. Further, at that meeting the Fellows were asked to create in each province in Canada and in each state in the Union a standards committee, the purpose of the committees being to advise with regard to a sound and constructive program of action. Promptly after that meeting, in accordance with the vote of the Fellows, these standards committees were elected by ballot through the mail.

For reasons of the war, these committees were not called together until October, 1917. At that time they were called into session in Chicago, about three hundred and thirty being present. About fifty leading hospital superintendents were also, on invitation, present at the meeting. For two days these committees with their guests considered three fundamental questions which were: What conditions exist in hospitals? What do we want in hospitals? What is to be done? This meeting clarified many hazy problems. A full report of the meeting (Bulletin Volume III, No. 1) was printed and distributed to the hospitals and to the Fellows. The immediate outcome of the meeting was the appointment of a committee of twenty-one, upon which were represented physicians, surgeons, hospital administrators, laboratory workers, statisticians, etc., the purpose being to outline a questionnaire through which the College might obtain hospital data essential in its further work and to consider a "minimum standard of efficiency."

The committee of twenty-one met for two days in Washington, D. C., in December, 1917, formulated the questionnaire, and discussed, the "minimum standard." Early in 1918 the questionnaire was sent to the hospitals, together with a letter asking the co-operation of the hospitals in the standardization program. The response of the hospitals to this questionnaire exceeded the most optimistic hope of those concerned with the work. Hundreds of letters came from all parts of the continent, pledging co-operation. As a matter of information the questionnaire was sent also to the Fellows. In March, 1918, a complete statement of the hospital standardization program of the College and of the minimum standard was sent to the hospitals and to the Fellows. This statement is Bulletin Volume III, No. 3, now out of print.

The conferences above referred to all emphasized the need of personal investigations of hospitals. In March, 1918, the work of personal investigations of hospitals was taken up. The College employed visitors or inspectors to make reports of conditions at the various hospitals. An important part of the work of the visitors was also to explain the details of the program more fully than can be done by pamphlets or letters, and to make clear the spirit of all of the undertaking.

At this time about 700 hospitals have been visited by staff members of the College. The reports of the visitors, together with the action taken, are recorded upon cards printed for the purpose, and are specific as to the following "minimum standard:"

**Staff Organization:** Extent of analysis or review of professional work; regularity of meetings; reorganizations contemplated; evidences of staffteam work, group discussion and interest in scientific work, research, education of internes, etc.

**Case Records:** Data as to medical, surgical and obstetrical case records of all classes of patients treated in the hospital; methods of recording, classifying, filing, etc.; contemplated changes.

**Clinical Laboratories:** Equipment of the laboratories; number and training of the labor-

atory workers and technicians; extent to which adequate laboratory service is provided; supervision given internes doing laboratory work.

A letter to the superintendent precedes these visits, outlining its object and stating the approximate date of visit. The visitors, of course, seek first of all the assistance of the superintendents in this work. And before each visit ends, the entire standardization program usually finds its way to the local Fellows, internists, staff groups, and members of the board of trustees. The frankness of all concerned with the hospitals in stating their problems and their willingness to consider these problems with the visitors of the College are a constant encouragement.

The following is one of the many reports made for the College by Mr. Frank E. Chapman, this report being an addition to the regular report on the minimum standard:

The X-ray equipment is very complete with an exceptionally bright and intelligent technician on duty at all times. Volume of work is not large but the character is very good. Do not believe it is being used as much as it should be. The hospital has a technician in charge of the laboratory. Not equipped to do Wassermanns; from the conversation I had with the technician, I do not think she is equipped to do laboratory work of any kind. There is no such thing as routine laboratory work. Very little pathology is done and that only when special charges are made.

The deplorable thing about the hospital is the general atmosphere of the place. It is a business proposition from start to finish. Pupil nurses are permitted to do special duty work even in the first year of their training for which the hospital charges and collects the fee. This institution is operated in conjunction with two other hospitals of the state, all of which are on a par.

Again, the following, somewhat condensed, is one of the reports made by Miss Anna C. Phillips:

Capacity: 150 beds. Private charitable institution.

Type: Medical, surgical, obstetrical. Num-

ber internes, three. Number pupil nurses, seventy-two.

**Staff Organization:** A loosely organized group. Regular meetings not held. Any physician in good standing may bring patients to wards or rooms. No regulations.

**Laboratories:** Well equipped, clean, light, laboratories in charge of part-time, trained workers. Pathological laboratory under-staffed and internes do laboratory work without supervision. No laboratory records kept which would indicate volume of work.

**Supplementary Report:** Hospital located in quiet residential section; car line near. New fire-proof building surrounding three sides of large open court gay with flowers, shrubs, etc. The low broad lines, balconies facing the court, and the general impression of brightness and comfort, reflect definite planning and thought. Atmosphere dignified and prosperous. A sense of confusion in the wards is probably due to the numbers of doctors attending and the varieties of treatments ordered for the same types of cases. Staff has been dissatisfied with existing organization, but has found difficulty in inducing the trustees to assume responsibility regarding establishment of definite rules and regulations. The teaching in the local medical school is not strengthened by the standards existing in this hospital. Duplicate report left with chief of staff for presentation to Board.

During the current year a full report of the results of these visits will be made by the College and classifications of the hospitals of one hundred beds or over will be published in accordance with the findings of the visitors. As stated in Bulletin Volume III, No. 3, the College will not include any hospital upon an accredited list which permits the practice of the division of fees to exist among the physicians and surgeons caring for patients in the hospital. For the convenience of governing boards of hospitals in expressing their policy in this matter, the following resolution is suggested:

Whereas, the practice known as the division of fees is unworthy and destructive to the best interest of patients and, whereas, the medical profession is unqualifiedly opposed to this practice in any guise whatever, therefore,

Be It Resolved that no physician or surgeon who engages in the division of fees may hold the privileges of practice in .....hospital, and further,

Be It Resolved that a copy of this resolution be sent to each physician and surgeon who now avails himself of the privileges of practice in .....hospital, and that further practice in the said hospital on the part of these physicians and surgeons be interpreted as acceptance in good faith of the foregoing resolutions.

In January, 1919, the College published a bulletin, Volume IV, No. 1, entitled, "Case Records and Their Use." This bulletin reviews the program of hospital standardization and explains in much detail what adequate case records are and what their value is in hospital service. Forty thousand copies of this bulletin have been distributed to doctors, hospital trustees, hospital superintendents, etc.

In January, 1919, the College published also a bulletin, Volume IV, No. 2, in which an actual set of case record forms was suggested. The purpose was "to prepare record forms which are simple, convenient, and adequate to meet the needs of record keeping in cases usually found in general hospitals." Forty thousand copies of this bulletin were distributed.

In the matter of keeping adequate case records among hospitals, the requirements for admission to Fellowship in the College have proved of practical help. Candidates for admission to Fellowship are requested to submit to the College one hundred case records, fifty in abstract and fifty in complete detail. These records, if they are to be approved by the College, must indicate intelligent and thorough study and treatment of the cases concerned. A hospital in which a candidate for Fellowship prepares these records, if not already keeping adequate records, is usually induced to do so.

Early in 1918, as soon as the program of the College was made clear, requests came from hospitals and doctors that the public be informed of the work. Much effort has been made to meet this demand. In more than forty cities hospital standardization conferences have been held during the past year. In the way the pro-

gram of the College has been carried not only to the medical profession and to hospitals, but also to business men's associations, chambers of commerce, women's clubs, etc. The following program held in April, 1919, in Portland, Oregon, is typical:

#### PROGRAM

*Luncheon, Chamber of Commerce, 12:15 p. m.*

Mr. A. L. Mills, Presiding.

Fifteen Minute Talk . . . . Dr. John G. Bowman

Fifteen Minute Talk Charles B. Moulinier, S. J.

AFTERNOON SESSION, 2:00 O'CLOCK.

*Lincoln High School*

The Occasion for the Conference,

Dr. Kenneth A. J. Mackenzie,

Chairman, State Committee on Standards

What is Hospital Standardization? (Clinical Laboratories, Case Records, Staff Organization.)

Dr. John G. Bowman,

Director of College

Discussion:

(a) Clinical Laboratories Dr. A. E. Mackay

Major R. L. Benson

(b) Case Records

Major R. C. Matson

Major Wm. S. Knox

(c) Staff Organization Dr. S. E. Josephi

Dr. E. F. Tucker

Summary

Charles B. Moulinier, S. J.

President, Catholic Hospital Association

Following such meetings many hospitals take immediate action to meet the minimum standard of the College. Sometimes a special meeting of the local county or city medical society is called with the object of bringing about hospital standardization for all of the hospitals in the vicinity at the same time. An outgrowth of a number of such meetings has been the organization of a central clinical laboratory to serve all of the hospitals.

The co-operation of the Catholic Hospital Association with the College is encouraging. The Association officially endorsed the program of the College as its own program, and through the leadership of Charles B. Moulinier, S. J., President of the Association, working as a representative of the College, the Catholic hospitals are revolutionizing the character of their service to their patients.

This comprehensive survey, undertaken by the College of Surgeons, has required for its successful execution the expenditure of a considerable sum of money, an average of more than fifteen thousand dollars a year, and as the work develops the expenditures will increase. More than thirty thousand dollars will be required for this work during the current year. The Fellows of the College have provided liberally for this and similar work by their dues and by the interest on the endowment of five hundred thousand dollars subscribed by the Fellows. A sum of thirty thousand dollars was also contributed to this special work by the Carnegie Corporation.

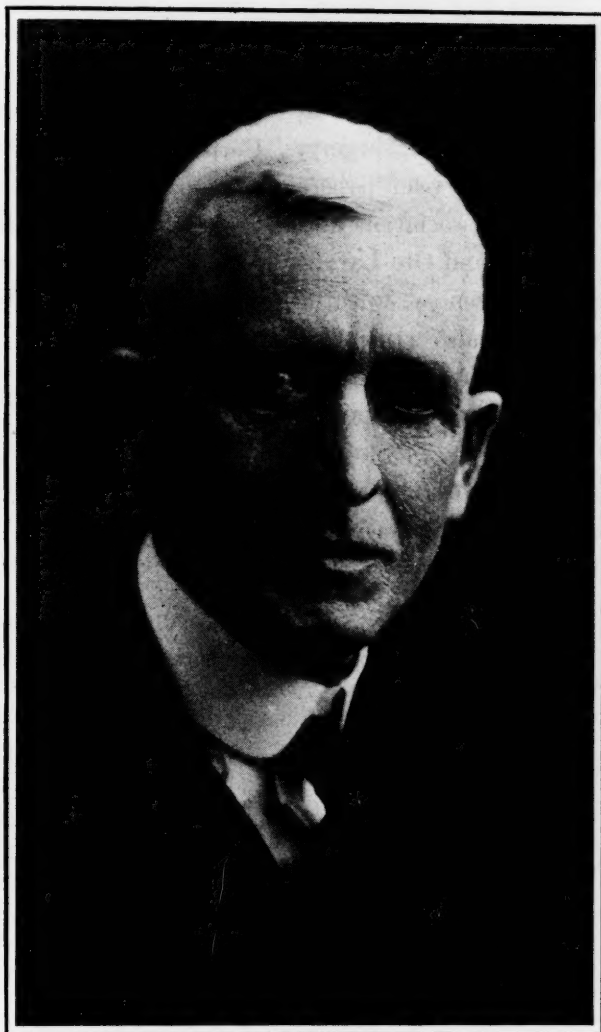
The rank and file of the Fellows of the College and its Board of Regents are keenly alive to the responsibility that they have assumed in undertaking this work, work that has been so carefully planned and is assuming such important proportions in personal service and financial outlay. The College can be depended upon to co-operate with all interested in the subject and to continue the direction of the project.

From beginning to end hospital standardization is the making of a reality out of an ideal. It is a high-spirited, clear-headed, dead-in-earnest effort on the part of all directly concerned with hospitals to call themselves to their own best senses. The inspiring fact about it today is that nearly all hospitals on the continent are gladly a part of the effort, lowering to their own surprise the mortality of their own good intentions.

#### PRESIDENT BAKER.

In the election at our 54th Annual Meeting of Dr. Charles H. Baker of Bay City to the presidency of our State Society to which office he is most assuredly deserving, we feel that the interests of this Society will be materially promoted.

Dr. Baker was born at Hillsdale, Mich., December 18, 1859, where he lived until 1873 when he moved to Detroit. In 1877 he entered Hillsdale College where he received the degrees of Bachelor and Master of Philosophy. This was followed by a course in medicine at Ann



PRESIDENT CHARLES H. BAKER

Bay City

Arbor where he received his M.D. degree, and later did graduate work in New York, Philadelphia, London, and Berlin.

Dr. Baker has practiced medicine and surgery in Bay City since 1883, but during the last twenty years has confined his practice to diseases of the eye, ear, nose, and throat. During the war period he served as a member of the medical advisory Board No. 4 in the capacity of ophthalmologist.

At our State Society meetings he has read papers before the sections on medicine, surgery, and ophthalmology, and has also read papers before the American Medical Association and the Academy of Ophthalmology and Oto-Laryngology. Dr. Baker has long been a faithful member of our Society, and is also a member of the American Medical Association, and the Academy of Ophthalmology and Oto-Laryngology.

As a Councilor of the tenth district, which office he held for two terms, Dr. Baker has done able and efficient work.

As our President we pledge him our loyal support and assistance in furthering the interests and activities of our organization.

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### *Editorial Comments*

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The Physicians' and Surgeons' Adjusting Association, of Kansas City, wishes to call the attention of physicians in this field to the fact that they do collect old accounts. This Journal has accepted their advertisement, which will be found on another page of this issue, and any business transacted with this company will no doubt be entirely satisfactory to those who have dealings with them.

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At a regular session of the United States Federal Trade Commission held in Washington, D. C., March 10, 1919, the complaint against the Victor Electric Corporation was ordered dismissed and discontinued. We congratulate the officers and members of the Victor organization on this vindication.

The personnel of the Victor organization is

largely made up of pioneer workers in the X-ray and physical therapy field and we have always believed that these men, (who are directing the policies of the Victor Electric Corporation), have been actuated by a desire to elevate rather than to lower the standard of business ethics in their field.

The Victor Corporation is to be congratulated upon having had this opportunity of having the Government searchlight turned upon its activities, and the clean bill of health which the Corporation has received should be an inspiration to its officers to continue to be guided by those ideals which should be kept in constant view by all who are engaged in an industry so closely allied to medical science.

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### *Correspondence*

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Caseville, Mich., April 13, 1919.

Dr. D. Emmett Welsh,  
Grand Rapids, Mich.

Dear Sir:

This Village is without a Doctor and we wrote the State Board of Health asking them to put us in touch with a Doctor. They refer us to you saying that you might be able to help us.

If you are in position to get in touch with a Doctor desiring to locate in a small town with good farming country we should be pleased to hear from you.

Yours very truly,  
SAM H. COCHRAN,  
Village President.

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New York, May 12th, 1919.

Dr. F. C. Warnshuis,  
Secretary, Michigan State Medical Society,  
My Dear Doctor:

The House of Delegates of the Medical Society of the State of New York adopted the following resolution at its Annual Meeting at Syracuse on May 6th, 1919:

"Resolved, That the delegates from this Society to the House of Delegates of the American Medical Association be and are hereby instructed to introduce a resolution, against compulsory health insurance, in the House of Delegates of the American Medical Association and to support it in every way possible."

Do you think it advisable to have your Society

adopt some similar resolution in order that the House of Delegates of the American Medical Association may not side-step this most important matter as they did last year?

Very sincerely yours,

EDEN V. DELPHEY, M.D.

### Deaths

**Major V. C. Vaughan, Jr., M. C.** of Detroit was accidentally drowned the early part of June in France. Major Vaughan was the eldest son of Colonel V. C. Vaughan of Ann Arbor. He early volunteered for service in the Medical Department of the Army. He served for nearly two years in France and expected to sail for this country in the near future.

Major Vaughan was an expert in tuberculosis and for many years had charge of the tubercular division of the Detroit Board of Health. We have lost an unusually able physician and a good citizen and his friends a charming comrade.

**Dr. P. S. Root**, for many years a member of the State Society, died at his home in Monroe, Mich., June 6th. Death was due to a stroke of apoplexy.

Dr. Root, who was 63 years of age, was born at Vernon, N. Y., April 26, 1856. He was a graduate of the University of Michigan of the class of 1881 since which time he has been located at Monroe, Mich.

Dr. Root is survived by the widow and one daughter.

### State News Notes

#### COLLECTIONS.

Physicians' Bills and Hospital Accounts collected anywhere in Michigan. H. C. VanAken, Lawyer, 309 Post Building, Battle Creek, Michigan. Reference any Bank in Battle Creek.

**THE STUDENTS' LIBRARY ASSOCIATION** of the Middlesex College of Medicine and Surgery solicits donations of Medical and Scientific libraries, Medical books, bound and unbound volumes of back numbers of Medical and Scientific Magazines, and funds for current American and foreign Medical

Journals. Jennie Hraba, Class '21, Association Secretary University of Massachusetts School for Medicine, East Cambridge, Mass.

#### FOR SALE.

\$8,000.00 practice in live town of 650 in farming and dairying community. Nearest competition 9½ miles. Collections at least 99 per cent. Fine class of people; 12 grade school. Town located on State highway within 30 miles of Grand Rapids Will sell for invoice of home, office fixtures, drugs, auto, etc., in all about \$3,500.00. Only small payment required. Best of reason for selling. Will introduce. No better small town proposition in Western Michigan for competent man who is not afraid of work. Address Add X, c/o Michigan State Journal.

The Uhlemann Optical Company of Chicago have opened a branch office in Detroit at State and Griswold streets in the Smith Building. Mr. A. A. Walstrom, advertising manager for the Uhlemann Optical Company will be in charge of the Detroit office.

The Detroit Medical Club held its annual meeting April 17th, at the residence of Dr. James Cleland. The program consisted of short addresses relating personal experiences in the Army Medical Service by the following returned members: Majors Frank B. Walker, George McKean, W. D. Ford, L. J. Hirschman, Captain C. E. Simpson and Lieutenant D. M. Griswold. Following the program a delightful lunch was served by the host. Besides those mentioned above the following members are or have been in Army Service; Lieut.-Colonels T. A. McGraw, H. R. Carstens, Major Robert Beattie, Captains H. W. Plaggemeyer, F. T. F. Stephenson, W. H. Morley and Lieutenant P. F. Morse. Out of a membership of thirty, thirteen (nearly 50 per cent.) have been in the Army.

The officers elected for the following year are:

President—Dr. James Cleland, Jr.

Vice President—Dr. J. H. Dempster.

Secretary-Treasurer—Dr. D. M. Griswold.

One-tenth of the graves in America's greatest cemetery in France, near Romagne, in the heart of the Meuse-Argonne battlefield, are now filled. An American Memorial League, whereby it is planned to have a French woman take care of some particular American soldier's grave in France, has been formed. The objects of the League are: To care for the graves of American soldiers who died in France whether in action or in hospital; to select May 30th, as an annual Memorial Day on

which the graves shall be decorated, with appropriate services; and to get in touch with the parents of the soldiers and to inform them of the care being taken of the grave and to furnish photographs on request.

The Detroit Academy of Medicine met May 27th, at the office of Dr. H. M. Rich. Captain Homer E. Safford gave an interesting talk on "His Personal Experiences in the Army." Following the paper Dr. Rich served the Fellows of the Academy with light refreshments.

During the past year Lieut.-Colonel P. M. Hickey, Lieut.-Colonel J. W. Vaughan, Major L. J. Hirschman and Major Ray Connor talked on the army medical life viewed from their individual standpoints.

The next annual meeting of the Academy will be held October 14, 1919, when it will celebrate its fifty years of continuous existence.

The first thousand volunteers raised in the U. S. for the Army of Occupation landed in Brest, May 15th. Among them were many silver strippers as well as men for whom a trip across the seas was not a novelty. Many former members of the A. E. F. were among the incoming Yanks.

Other units of 1,000 men each will arrive in France closely following the first group. Recruiting of volunteers to relieve those men of the Army of Occupation entitled to earliest discharge because of distress in their families and other reasons, has resulted in the enlistment of approximately 20,000 men.

Doctor Guy L. Kiefer, of Detroit, attended the Conference of State and Territorial Boards of Health held with the Surgeon General's office at Washington, D. C. Doctor Kiefer also attended the meeting of the Association of State and Territorial Boards of Health at Atlantic City last month.

Ashley, Bannister, and Eureka, three small towns closely connected, we are informed are in need of a physician. Bannister and Ashley are on the Ann Arbor Railroad. Any doctor locating here will find plenty to do. Further information may be had by communicating with this office.

F. M. Bell, head of Armour and Company's Pharmaceutical Department sailed recently for Europe where he will study business conditions and get an inside viewpoint of the general pharmaceutical activities in foreign countries. Mr. Bell's visit which will last approximately two months will include trips through England, France and Italy.

Armour and Company's line of pharmaceutical

goods which is well known in medical circles has been under the direction of Mr. Bell for many years.

Dunbar Memorial Hospital, 212 Frederick Street, the first public hospital in Detroit for Negroes, was opened May 30th, with dedication ceremonies. The speakers for the occasion included a number of clergymen. At present there is only accommodation for thirty patients. It is hoped that soon the building will be enlarged. The staff consists of seventeen physicians. Eighteen Negro citizens of Detroit subscribed nearly all of the \$6,000 which was raised.

A Committee of the National Board of Medical Examiners has been appointed to visit England, France and Italy. This Committee is composed of Drs. L. A. LaGarde, V. C. Vaughan and W. L. Bierring. The purpose of this mission is to confer with examining boards and to obtain recognition of American Medicine on the basis of the Medical Board's Certificate of examination.

The Michigan State Board of Registration in Medicine held its regular meeting in Ann Arbor, June 10 and 11, 1919. The Secretary, Dr. Harrison, and the following members, Drs. Le Fevre, Nyland, Hume, Shipp, McLaughlin, Cameron and G. L. Connor, were present. At this time the June examinations were held.

Mrs. Guy L. Kiefer, of Detroit, attended the meeting of the National Committee to secure Military rank for nurses held in Washington, D. C. last month. Mrs. Kiefer represented the State Committee for Michigan of which Mrs. Albert E. Sleeper is Chairman and Mrs. Russell A. Alger, Jr., is vice-Chairman.

The venereal rate is so low in the Army of Occupation that it can not be computed on a basis of so many men per thousand—the fraction would be too small—so it is computed on a yearly basis. The rate April 27 was twenty-two cases per thousand in the course of a year. The S. O. S. has an equally low venereal record.

A gift of a nurses' home by Mayor James Couzens of Detroit was announced June 1st. The building will be on the east side of John R Street, just south of Harper Hospital. It will cost \$300,000.

There will be accommodations for 225 nurses. The building will be six stories high and will have every appliance for the care, education and entertainment of nurses.

Dr. Homer E. Safford, of Detroit, read a paper on his personal experiences in the U. S. Army with special reference to psychiatry before the Detroit Academy of Medicine on May 27, 1919.

The last meeting of the Detroit Medical Club was held June 2nd. Dr. James E. Davis gave a lantern slide talk on "The Pathology of the Thyroid Gland."

Doctor Edwin L. Robinson, of Detroit, is now located at 435 Woodward Ave., Suite 312, McKerchey Bldg. Doctor Robinson formerly had offices at 42 Sproat St.

Drs. D. Emmett Welsh, Grand Rapids; A. W. Hornbogen, Marquette; J. Brook, Grandville, and W. J. Wilson, Detroit, are attending the American Medical Association meeting as our State Delegates.

Major F. C. Warnshuis, our Secretary-Editor, arrived in New York from France June 18th, and we expect and hope he will be home in time to get out the August number of the *Journal*.

Captain E. B. Stebbins, of Ironwood, has been promoted to rank of Major. Major Stebbins is still in France with Base Hospital No. 101.

The next semi-annual meeting of the Tri-State Medical Society, composed of physicians and surgeons of Michigan, Ohio, and Indiana, will be held in Kalamazoo, the fore part of October, 1919.

Major R. G. Owen of Detroit has returned from Service overseas and has resumed his position as Laboratory Director of the Detroit Clinical Laboratory.

Dr. Herbert S. Karr, of Detroit, is now located at 435 Woodward Avenue, Suite 310-14 McKerchey Building.

Dr. Hedley Williamson, of Detroit, was recently operated for appendicitis. The Doctor is making a nice recovery.

Dr. David Littlejohn, formerly of Bridgman, Mich., is now located at 312 State St., St. Joseph, Mich.

Dr. John H. Charters of Grand Rapids is now located at 1500 Chene St., Detroit.

Dr. and Mrs. Guy L. Kiefer, of Detroit, opened their summer cottage at Mackinaw, July 1, 1919.

## COUNTY SOCIETY NEWS

It is the Editor's desire to have this department of the *Journal* contain the report of every meeting that is held by a Local Society. County Secretaries are urged to send in these reports promptly

### BENZIE COUNTY.

The Benzie County Medical Society met at hotel Yeazel, Frankfort, May 19th, and elected officers for the ensuing year as follows:

President—W. J. Shilliday of Lake Ann.

Vice President—J. M. Stone, of Honor.

Secretary-Treasurer—E. J. C. Ellis, of Benzonia.

Delegate to the State Society—C. P. Doyle, of Frankfort.

Alternate to the State Society—F. H. Stone, of Beulah.

The next meeting will be at the home of J. M. Stone in Honor.

E. J. C. ELLIS, Secretary.

On June 11 the Benzie County Medical Society met with Dr. J. M. Stone of Honor and were served with a very fine dinner in the evening.

At this meeting Dr. M. F. Stever of Thompsonville was elected to membership, this only leaves

one Doctor in the County outside of the Society and we do not intend to allow this county to be less than 100 per cent. very long.

The next meeting will be at Benzonia July 9th, and some outside talent will be invited to entertain us.

E. J. C. ELLIS, Secretary.

### GRAND TRAVERSE-LEELANAU COUNTY

"The regular monthly meeting was held on June 3, 1919, in Traverse City at Dr. E. L. Thirlby's office. An interesting paper was presented by Dr. Paul H. Piper of Traverse City, on "Focal Infection."

H. V. HENDRICKS, Secretary.

### LENAWEE COUNTY

The Lenawee County Medical Society held its regular monthly meeting June 10, 1919, at the New

Adrian Hotel, Adrian, Mich., Vice-President R. M. Eccles, of Blissfield, presiding.

The minutes of the previous meeting were read and approved.

Dr. Guy M. Clafflin, of Deerfield, addressed the Society on "The Control of Communicable Diseases in the Army" and expressed the hope that the time would soon come when the civilian population of the country would be protected by the public health authorities of the Federal government, following out much the same system as that employed in the Army.

Capt. A. W. Chase, of Fort Hancock, N. J., was present and addressed the Society. He gave an interesting account of some of his experiences and told of many wonderful deeds performed by surgeons in the Army Medical Corps.

Upon motion, the rules were suspended, and Dr. H. H. Hammel, of Tecumseh, was elected to membership by acclamation, the Board of Directors having reported favorably upon his application.

Upon motion, Drs. W. E. Jewett, Sr., A. M. Allen, and Daniel Todd, of Adrian, and Dr. L. G. North, of Tecumseh, were made Honorary Members of the Lenawee County Medical Society.

After some discussion, a motion was made by E. T. Morden and was afterward carried, that a special meeting be called for June 24, 1919, to take the place of the July meeting, that the meeting be for the purpose of revising the county free-schedule, and that a committee, composed of Drs. G. M. Clafflin, of Deerfield; C. H. Westgate, of Weston; A. L. Spalding, of Hudson; J. W. Beardsley, of Tecumseh, and O. Whitney, of Adrian, be appointed to draft a new fee-schedule to present at the special meeting.

There being no further business, the Society adjourned.

E. T. MORDEN, Secretary.

#### MASON COUNTY.

At a meeting of the Mason County Medical Society held June 3, 1919, Dr. Louis Pelletier of Ludington was elected President of the Society. Dr. I. L. Hunt, of Scottville is Vice President. Dr. C. M. Spencer, Ludington is Secretary and Treasurer.

### Miscellany

*Helpful Hints for Busy Doctors.*—A comparatively recent issue of the International Journal of Surgery has an editorial on "The Questionable Etiology of the Present Epidemic," signed "G. H. Sherman, M.D." It was to the effect that one

can best immunize against influenza by using "a combined vaccine containing the influenza bacillus, pneumococci, streptococci, the *Micrococcus catarrhalis* and staphylococci." In the advertising pages of the same issue was an advertisement of "Influenza Vaccine No. 38," which "Will abort Colds, Grippe, Influenza and Pneumonia," and which was made by "G. H. Sherman, M.D." The vaccine contained the various bacilli and cocci mentioned in the G. H. Sherman editorial. One wonders if in succeeding issues of the International Journal of Surgery one may look for editorials by the proprietors of Bellans, Phenalgin and other products advertised in the publication. (*Jour. A.M.A.*, May 10, 1919, p. 1372).

*Administration of Arsphenamine.*—The U. S. Public Health Service has issued a circular concerning the dilution and the rate of administration of arsphenamine solutions. A study as to the cause of the disagreeable results following the use of the various preparations of arsphenamine has indicated that most disagreeable results are not inherent in the preparations but are produced through faulty steps in the administration of the remedy, chiefly from the use of a too concentrated solution and by too rapid administration. (*Jour. A.M.A.*, May 10, 1919, p. 1372).

*Lane's Asthma Cure.*—The A.M.A. Chemical Laboratory reports that Lane's Treatment, double strength, for Hayfever and Asthma (formerly called Lane's Asthma Cure) was found to be essentially a solution of calcium iodid, alcohol and water, with vegetable extractives and sugar. It contained 3.96 Gm. of anhydrous calcium iodid, or about 2.5 grains per dose. Iodids have been used for years in the treatment of certain forms of asthma. Under careful supervision the use of iodids in selected cases of asthma may give decidedly satisfactory results. Self dosing with iodids, however, is by no means free from danger. (*Jour. A.M.A.*, May 10, 1919, p. 1386).

*Tyree's Antiseptic Powder.*—An advertising leaflet for Tyree's Antiseptic Powder recently received by a physician is devoted largely to a report of a bacteriologic examination of the Tyree's preparation. The physicians who receive this advertising material might easily overlook the fact that the reported bacteriologic tests were made in 1889 and that the investigation of the Council on Pharmacy and Chemistry in 1906 brought out that the examination applied to a product differing radically in composition from that of the preparation now marketed. The Council found that although the Tyree

preparation was advertised as a mixture of borax and alum, it was essentially a mixture of zinc sulphate and boric acid. Here then we have a manufacturer publishing in 1919, in behalf of a certain product, tests that were made in 1889 with a product of different composition although of the same name. (*Jour. A.M.A.*, May 17, 1919, p. 1482).

*Peptenzyme.*—Peptenzyme was reported on by the Council on Pharmacy and Chemistry along with a number of other products of Reed and Carnrick in 1907. The report "Reed and Carnrick's Methods" announced that none of the products examined were eligible for New and Nonofficial Remedies. The following is an abstract of the report on Peptenzyme: Peptenzyme elixir and powder are said to contain "the enzymes and ferments of all the glands which bear any relation to digestion;" therefore, the peptic glands, pancreas, salivary glands, spleen and intestinal glands. The preparations are said to be "not chemical extracts, but pure physiologic products." Apparently Peptenzyme powder consists of the glands, dried and powdered, while the elixir is an extract. It is stated that these preparations digest proteids, starch and fat, and in addition stimulate and nourish the digestive glands, and that the ferments in these preparations do not interfere with or digest one another. Examination by the Council showed that these preparations were practically devoid of any power to digest proteids or fat when tested by the U. S. P. method. The claim that the product contained ferments which would not show this activity in the test tube, but become active in the alimentary canal, is contrary to known facts and could not be substantiated by the manufacturer. The claims made for Peptenzyme powder and elixir were held to be unwarranted. (*Jour. A.M.A.*, May 17, 1919, p. 1484).

*Kline's Nerve Remedy.*—This epilepsy nostrum was analyzed by the A.M.A. Chemical Laboratory and found to be a bromid preparation and practically identical with Waterman's Tonic-restorative.

*Chase's Rheumatic Specific.*—The A.M.A. Chemical Laboratory found this to have essentially the following composition: sodium salicylate 22.4 per cent., magnesium oxid 5.3 per cent. licorice root 72.3 per cent.

*Diabetol.*—In 1910 Professor Millspaugh at the Field Museum, Chicago, found this herb to be from a shrub—*Stenolobium stans* (L.)—growing in Arizona, Mexico and Central America.

*Varnesis.*—Some time ago, the State chemists of

Connecticut found this to contain 18 per cent. alcohol and less than 1 per cent. vegetable extractives derived from laxative drugs and capsicum. Later the alcohol percentage was reduced to 15.

*Viavi.*—Viavi Capsules were analyzed for the California State Medical Journal and reported to contain nothing but extract of hydrastis and cocoa butter.

*Nuxated Iron.*—The analysis in the A.M.A. Chemical Laboratory indicated that Nuxated Iron Tablets contained only 1-25 grain of iron, while the amount of nux vomica was practically negligible. Nuxated Iron has been advertised by an extensive campaign of misrepresentation and exaggeration. (*Jour. A.M.A.*, May 24, 1919, p. 1560).

*Sanosin.*—Sanosin (first introduced as Sartolin) consists of a mixture of powdered eucalyptus leaves, flowers of sulphur, powdered wood charcoal, and oil of eucalyptus. The instructions to the consumptive are that this mixture should be placed on a slab under which an alcohol lamp is burning. The whole thing is to be operated in a room which is tightly closed and in which the consumptive is supposed to stay. (*Jour. A.M.A.*, May 24, 1919, p. 1561).

*The Williams Treatment.*—According to the Dr. D. A. Williams Company, which sells it on the mail order plan, the Williams Treatment "conquers kidney and bladder diseases, rheumatism and all other ailments when due to excessive uric acid." The Williams Treatment was analyzed in the A.M.A. Chemical Laboratory and from the results of the examination it was concluded that it is essentially a mixture containing in 100 Cc. 48 Gm. potassium acetate in solution and about 7 Gm. potassium bicarbonate, the latter being largely undissolved. The mixture is colored with caramel and flavored with oil of wintergreen or methyl salicylate. (*Jour. A.M.A.*, May 31, 1919, p. 1632).

*Town's Epilepsy Treatment.*—This is a bromide epilepsy preparation and was analyzed by the A.M.A. Chemical Laboratory. (*Jour. A.M.A.*, May 24, 1919, p. 1561).

*Investigation Based on False Premises.*—One sometimes reads in supposedly "Original Articles" in medical journals statements that seem puzzlingly familiar. If one is sufficiently inquisitive and possessed of a germ of Sherlock Holmesism, the familiar statement may be traced to the "litera-

ture" for some proprietary medicine with which the author's article deals. The unwisdom of authors accepting the unconfirmed statements of the promoters of proprietary remedies is well illustrated in a recent report of the Council on Pharmacy and Chemistry on "Collosol Cocaine," a preparation claimed to contain 1 per cent. of cocain in colloidal and relatively nontoxic form. The report brings out that men of good standing had reported "Collosol Cocaine" to be much less toxic than cocain. These men, however, did not verify the statement of its composition, and subsequent investigation by others brought out the fact that "Collosol Cocaine 1 per cent." contained but 0.26 per cent. cocain, and that its toxicity was in accord with the amount of cocain found. Those who investigate the action of drugs must recognize more fully than has often been done in the past, that a study of a medicament is of no scientific value whenever the identity of the substance is not established. (*Jour. Ind. State Med. Assn.*, May, 1919, p. 134).

**Therapeutic Evidence.**—Has the medical profession learned to distinguish between real therapeutic evidence and chance observation? If so, the profession will not be impressed by certain testimonials for a widely advertised ointment. The wise physician who reads the testimonials will ask: Was it the "baking" or the proprietary ointment which produced the "remarkable results" in "rheumatic affections and ankylosis?" Was the "contracted arm chronic" benefited by time and friction or by the proprietary? How did the physician know that "anointing the nostrils" prevents attacks of influenza? Those who are inclined to give credit to drugs for naturally occurring events may be interested in the statement of a prominent chemist that he has been free from his periodical colds since he arranged for an inoculation with a "cold" vaccine but was prevented from keeping the appointment. (*Penn. Med. Jour.*, May, 1919, p. 524).

After being closed for two years due to government restrictions prohibiting visitors from the stockyards because of the war, Armour and Company's huge plant in the Chicago stockyards is again open to visitors, an announcement from the company states.

This announcement will prove of interest to not only people who intend to visit Chicago some time this summer but to many others as well because, the announcement says, "preparations are being made by Armour and Company to open their other plants in various parts of the country so that a trip through a packing plant which is an educational

one, will not just be limited to Chicagoans or visitors to Chicago, but to people in fifteen different parts of the United States, where Armour and Company have packing plants. Uniformed guides are in attendance to explain the various interesting things to be seen."

**Phosphorus Metabolism.**—The more recent investigations on digestion and absorption all point to the probability that phosphorus from the digestive tract reaches the general circulation only in the form of inorganic phosphates and that all organic phosphorus compounds are synthesized in the body cells. This is in support of the conclusion of the Council on Pharmacy and Chemistry in forming an estimate of the therapeutic potency ascribed to preparations of organically bound phosphorus, such as lecithin, glycerophosphates, phytin, macleic acid and phospho-proteins. All the newer researches give no indication that the body is dependent on a ready made supply of phosphatid (phosphorized fat) in the diet to maintain normal nutrition. (*Jour. A.M.A.*, May 3, 1919, p. 1294).

**Two Misbranded Nostrums.**—Bull's Herbs and Iron Compound was a weak alcoholic solution containing iron, phosphates, sugar and vegetable derivatives, among which were quinine, red pepper, gentian and podophyllum. It was falsely and fraudulently represented as a remedy for weak nerves, ailments peculiar to women, scrofula, rickets, liver, kidney and bladder diseases, etc. Effervescente Granulare consisted of over 13 per cent. sodium bicarbonate, 61 per cent. of sugar, 3 per cent. of borax, and 17 per cent. potassium bitartrate. Though invoiced as "Eff. Magnesia" it contained no magnesia. Both were declared misbranded. (*Jour. A.M.A.*, May 3, 1919, p. 1316).

**Collosol Manganese.**—Stephens, Yorke, Blacklock, Macfie, Cooper and Carter report in the *Annals of Tropical Medicine and Parasitology* the results of their investigation for the English government of Collosol Manganese conclude that Collosol Manganese in the doses used is of no value in the treatment of simple tertian malaria. (*Jour. A.M.A.*, May 3, 1919, p. 1318).

During May the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Abbott Laboratories: Liquor Hypophysis, U. S. P. Abbott. Procaine Hypodermic Tablets,  $\frac{3}{4}$  grain.

Procaine-Adrenalin Hypodermic Tablets, Abbott.

Gilliland Laboratories: Antimeningococcic Serum (Combined Type) (Gilliland). Diphtheria Antitoxin, Concentrated and Refined. Tetanus Antitoxin, Concentrated and Refined. Antipneumococcus Serum Type I Small Pox Vaccine Original Tuberculin "O T"

E. R. Squibb and Sons: Protargentum-Squibb.